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AUTHOR	Miller, David H.; Beasley, Gary F.
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AESTRACT

Designed as an individual study guide as well as a teaching reference and guide, this teaching-study unit presents instruction on using educational information retrieval indexes, particularly the Educational Resources Information Center (ERIC) system's: (1) "Research in Education" (RIE), (2) "Current Index to Journals in Education" (CIJE), (3) "Abstracts of Instructional Materials in Vocational and Technical Education" (AIM), and (4) "Abstracts of Research Materials in Vocational and Technical Education" (ARM). The guide contains: (1) a discussion of the ERIC system's information retrieval products and other library retrieval sources, (2) instruction in conducting a manual or computer search of the ERIC system, which consists of defining the problem and outlining the search strategy, and (3) information for locating documents identified through the search. Appended materials include: (1) a glossary of ERIC terminology, (2) sample pages from ERIC access products, (3) several "hands-on" exercises in the use of RIE, CIJE, AIM, ARM, the "ERIC Thesaurus," and the computer search. Transparency masters for the visuals presented in the text are available from the Product Utilization Section of The Center for Vocational and Technical Education. (SB)

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ERIC INSTRUCTIONAL PACKAGE FOR VOCATIONAL EDUCATORS

Information Series No. 67

ERIC

Clearinghouse on Vocational and Technical Education

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FOREWORD

As the ERIC Collection continues to grow and becomes an increasingly important information resource for educators, it is necessary to instruct potential users on how to efficiently and effectively utilize the system. This ERIC instructional package is designed to serve as a self-study unit or an instructional guide. Transparency masters are available for group instruction.

The functions of Research in Education (RIE), Current Index to Journals in Education (CIJE), Abstracts of Instructional Materials in Vocational and Technical Education (AIM), and Abstracts of Research Materials in Vocational and Technical Education (ARM) are explored with the user gaining first-hand experience in retrieving information. The user is moved systematically through the development of a problem statement, first determining the parameters of the problem and then outlining the search strategy. The problem statement provides the searcher with the information upon which to select terms to be used in conducting a subject index search. Instruction is provided in the use of the Thesaurus of ERIC Descriptors in converting retrieval terms to ERIC terminology.

Steps in conducting a manual search of the ERIC system are outlined, with accompanying hands-on exercises in the use of RIE, CIJE, AIM, and ARM. Formulation of computer (QUERY) search requests is explained with opportunity for participants to demonstrate an understanding of combining descriptors in "and" (+), "or" (/) logic.

The profession is indebted to David H. Miller and Gary F. Beasley for their scholarship in the preparation of this product. Recognition is also due Garry Bice, Tennessee Research Coordinating Unit for Vocational Education; and Norman Ehresman, Western Kentucky University, for their critical review of the manuscript prior to final revision and publication.

Robert E. Taylor
Director
The Center for Vocational and Technical Education
ERIC Clearinghouse on Vocational and Technical Education

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ERIC INSTRUCTIONAL PACKAGE FOR VOCATIONAL EDUCATORS

David H. Miller

and

Gary F. Beasley

ERIC Clearinghouse on Vocational and Technical Education
The Center for Vocational and Technical Education
The Ohio State University
1960 Kenny Road Columbus, Ohio

1973

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INTRODUCTION

This teaching-study unit presents instruction on using educational information retrieval indexes--particularly the Educational Resources Information Center (ERIC) system's Research in Education (RIE), and Current Index to Journals in Education (CIJE), published by the U.S. Office of Education, as well as Abstracts of Instructional Materials in Vocational and Technical Education (AIM) and Abstracts of Research Materials in Vocational and Technical Education (ARM), published by The Center for Vocational and Technical Education. The unit is designed for use as an individual study guide as well as a teaching reference and guide.

Message to the Individual User

This instructional unit on the use of ERIC can be a very effective self-learning device. It is recommended that the user have ready access to individual issues of RIE, CIJE, AIM, ARM, and a copy of the Thesaurus of ERIC Descriptors before beginning the study unit. The visual aids which are presented in the text provide a reference to key points for consideration, as do Appendix A "ERIC Terminology," and Appendix B "Sample Formats for Use of ERIC Access Products." After reading the text, the search exercises in Appendix C, should be completed as a means of assuring that "hands-on" experience is gained in the use of the retrieval indexes.

Message to the Instructor

The ERIC Instructional Package may be used in a variety of ways. Therefore, the instructor should become familiar with the unit before any attempt is made to use it. The unit can be used in group study, or it may be assigned as an independent study activity.

For group instruction as well as for independent study, it is recommended that every student have access to an issue of RIE, CIJE, AIM, ARM, and a copy of the Thesaurus of ERIC Descriptors. Transparency masters for the visuals presented in the text are available from:

Product Utilization Section
The Center for Vocational and Technical Education
1960 Kenny Road
Columbus, Ohio 43210

The instructor may elect to use only selected portions of the material in presenting instruction on information retrieval. If this approach is selected, the transparencies should be used in the lecture/

discussion presentation. Throughout the text of this instructional unit, transparency references are noted where applicable. As part of the lecture/discussion presentation, reference may be made frequently to visuals, "Sample Formats of ERIC Access Products" (Appendix B). After completing the lecture/discussion presentation, the "hands-on" exercises will familiarize students with search activities in the retrieval indexes (Appendix C). The instructor may use these exercises or prepare additional activities to meet individual student needs. The Performance Tests on ERIC Access Products: RIE, CIJE, ARM and AIM, the ERIC Thesaurus, and computer searching (Appendix D), can be used to determine user understanding.

If the instructional unit is assigned to students as an individual activity, the instructor should insure that "hands-on" exercises are utilized in some manner. Such exercises can be used through outside assignments or as classroom activities.

Instructional Objectives

The following instructional objectives should provide a description of the knowledge and skills which can be acquired as a result of learning experiences presented, and describe the behavior that should be demonstrated after completing the ERIC Instructional Package.

1. The participant who has acquired the knowledge and understanding of the information retrieval process will be able to:

   a. describe the process of converting an information problem to a search statement;

   b. choose relevant descriptors for use in a search strategy; and

   c. describe the function of microforms and how to use them in information retrieval.

2. The participant will acquire a knowledge and understanding of the scope and organizational structure of ERIC and will be able to:

   a. list at least two reference indexes available through the Central ERIC facility;

   b. list the two reference indexes available through The Center for Vocational and Technical Education;

c. define the function of the ERIC Document Reproduction Service (EDRS); and

d. list a minimum of four library resource reference tools that can be used to supplement the ERIC reference publications.

3. The participant will understand the function of and be able to use Abstracts of Instructional Materials in Vocational and Technical Education (AIM), and Abstracts of Research Materials in Vocational and Technical Education (ARM) so that, when given an information retrieval problem, he can identify relevant documents by means of a manual search. He will then be able to:

a. select appropriate descriptors for an information search problem when given a description of the problem;

b. take a descriptor (index/retrieval term) pertaining to a search problem and

(1) locate at least one document title and accession number in the Subject and Identifier Index,

(2) locate the document resume in the Abstract Section of AIM or ARM,

(3) list the name of the author of the document,

(4) list the availability of the full-text document,

(5) list the agency which sponsored the research or instructional materials development,

(6) list the date of publication and the number of pages of the original document,

(7) locate the citation in the Personal and Institutional Author Index,

(8) locate the citation in the Conversion of Document Index, and

(9) locate the citation in the Document Number Index.

4. The participant will have learned the function of and be able to use Research in Education (RIE) so that, when given an information retrieval problem, he can identify relevant documents by means of a manual search. He will thus be able to:

a. select appropriate descriptors for a given search problem;

b. take a descriptor and

(1) locate at least one document title and accession number in the Subject and Identifier Index,

(2) locate the document resume in the Resume Section of RIE,

(3) list the author of the document,

(4) list the availability of the full-text document,

(5) list the publication date of the original document,

(6) list the ERIC Clearinghouse that processed the document,

(7) list the agency that sponsored the research,

(8) locate the document in the Author Index, and

(9) locate the accession number in the Cross Reference Index.

5. The participant will understand the function of and be able to use Current Index to Journals in Education (CIJE) so that, when given an information retrieval problem, he can identify relevant journal article citations by means of a manual search. Thus, he will be able to:

a. select appropriate descriptors for an information search problem when given a description of the problem;

b. take a descriptor pertaining to the search problem and

(1) locate at least one journal article citation in the Subject Index,

(2) list the title of the journal article,

(3) list the title of the journal in which the article appears,

(4) locate the resume of the journal article in the Main Entry Section and identify the Descriptor Group under which the citation appears,

(5) locate the journal article citation in the Author Index,

(6) list the volume and issue numbers, number of pages, and date of the journal article, and

(7) locate the journal citation in the Journal Contents Index.

6. The participant will be able to demonstrate proficiency in using the Thesaurus of ERIC Descriptors. He will demonstrate this proficiency by being able to:

a. locate and list descriptors when given a specific multiword term by utilizing the words-in-context feature of the Rotated Descriptor Display within the Thesaurus.

b. locate and list at least one broader term (BT) item associated with a specific ERIC descriptor;

c. locate and list at least one narrower term (NT) item associated with a specific ERIC descriptor;

d. locate and list at least one related term (RT) item associated with a specific ERIC descriptor;

e. locate and list a scope note (SN) item associated with a specific ERIC descriptor; and

f. locate and list at least one ERIC term that can be used as an alternate for a given "non-ERIC" term.

7. The participant will understand the function of and be able to perform necessary steps in formulating a computer (QUERY) search request, allowing him to:

a. convert a search problem into a specific search statement in order to minimize the retrieval of irrelevant materials;

b. select appropriate descriptors from the Thesaurus to use in the computer search request; and

c. be able to demonstrate an understanding of combining descriptors in "and" (+) and "or" (/) logic when specifying the search strategy by selecting appropriate descriptor combinations in a search exercise.

INFORMATION RETRIEVAL PRODUCTS

Users of education-related information are generally motivated by one overriding factor: a need to increase their awareness of what has been done and what is being done to solve educational problems. Many sources of information, including personal contacts with colleagues, are available to the researcher and practitioner in education. The education literature provides an almost overwhelming resource of such information. Literally thousands of books, research reports, texts of speeches, sets of instructional materials, and journal articles are published daily. Other types of educational literature include critical reviews, bibliographies, and state-of-the-art papers. To obtain information on resource materials, various retrieval tools can be used.

Library Information Retrieval Tools

1. The library card catalog system is an important resource. Most library card catalog systems include subject, author, and title sections that can direct the searcher to specific reading materials that have been acquired by the library in which the system is housed.

2. The Readers' Guide to Periodical Literature lists a wide selection of periodicals, but is not limited to periodicals contained in a particular library.

3. The Educational Index lists bibliographic data on periodicals within the realm of education. This reference tool is available in most university and college libraries but may not be available in secondary school or public libraries.

4. Dissertation Abstracts International is another possible reference source. It includes abstracts of doctoral dissertations from major universities and also lists the availability of individual full-text dissertations. Many colleges and universities contain a collection of these volumes.

5. Direct Access to Reference Information (DATRIX), a computer-based retrieval system, is also available for identifying abstracts of dissertations in its collection.

Educational Resources Information Center

Using all the above reference tools in locating literature will ensure a fairly comprehensive search. Collectively, however, these do not represent a coordinated effort at developing resource materials into a comprehensive educational information system.

To provide a national educational information system, the U.S. Office of Education (USOE) has developed the Educational Resources Information Center (ERIC) system. This system provides ready access to: results of exemplary programs, research and development efforts, and related information that can be used in developing more effective educational programs.

Through a network of specialized centers or clearinghouses, each of which is responsible for a particular educational area, current significant information relevant to education is acquired, evaluated, abstracted, indexed, and listed in one or more of the ERIC reference publications. A central ERIC facility coordinates the processing of documents by the separate clearinghouses and assembles ERIC reference publications and makes them available to users.

ERIC Access Products. Two indexes available through Central ERIC are:

> Research in Education (RIE), a monthly abstract journal reporting research reports and related documents of educational significance indexed by subject, author, and institution (see Appendix B-1); and
>
> Current Index to Journals in Education (CIJE), a monthly guide to periodical literature covering over 500 educational and related journals (see Appendix B-2).

Two reference publications devoted to vocational and technical education are available through The Center for Vocational and Technical Education. These are:

Abstracts of Instructional Materials in Vocational and Technical Education (AIM), a quarterly publication which contains abstracts and bibliographic data on materials used by teachers in presenting information to students or materials used by students in connection with classroom instruction; and

Abstracts of Research Materials in Vocational and Technical Education (ARM), also a quarterly publication which includes abstracts and bibliographic data on research and research-related documents as well as information on specially funded research projects currently underway (see Appendix B-3).

Both AIM and ARM include, with their abstracts, information on microfiche (MF) and hard copy (HC) availability of the full-text documents from which the abstracts were developed.

The Thesaurus of ERIC Descriptors serves as an authoritative guide for assigning the descriptive terms used to index the various reports and journal articles that are entered into the ERIC information system. All terms in the Thesaurus are based on documents or journal articles previously indexed and currently included in the ERIC system. It is updated quarterly in a "Working Copy" format.

Index Format. ERIC reference tools are designed so that, once familiar with the format of one publication, you will be able to use all others. They are indexed to offer a variety of approaches for finding information by using:

* Subject Index--to find documents and projects on a specific topic through use of descriptors (Index/Retrieval Terms).

* Author or Investigator Index--to find out what an author has written or to learn what an investigator is now doing.

* Institution Index--to find out what an institution has published or what research projects are now being conducted at an institution.

* Accession Number Index--to identify a document when only the clearinghouse number (e.g., VT) or Central ERIC (ED) number is available.

Computer Retrieval Capability. ERIC is also accessible through automated processes such as magnetic tapes. Organizations having access to computers and appropriate retrieval software packages may wish to take advantage of the magnetic tapes (machine-readable forms) or ERIC files which are updated quarterly. One system utilizing tapes is QUERY. QUERY is the information retrieval program which is used to search the ERIC magnetic tape file. It is a proprietary system made available through USOE on a limited basis to state and local educational agencies.

FORMULATING THE MANUAL SEARCH

Information retrieval often involves locating documents from the bibliographic information that is available -- such as the name of an author, the name of an institution, or specific accession numbers that relate to that problem. When references on a specific topic are not known or if additional references are needed, a search strategy must be designed that can direct the searcher to information that addresses the problem.

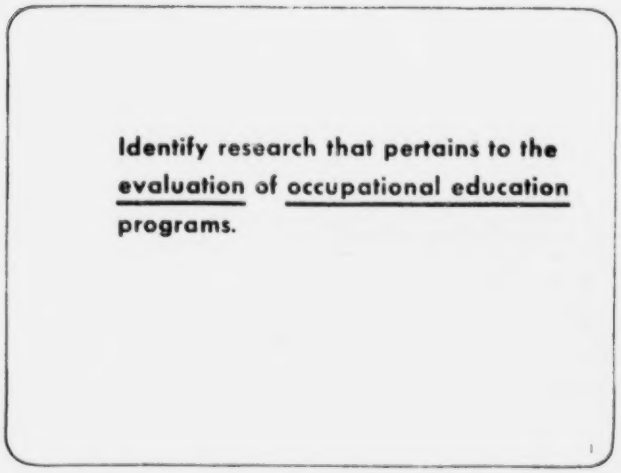
Search Statement

The first step in designing a search strategy is to convert the information problem into a search statement. A search statement is formulated by determining the parameters of the search problem and then listing the specific needs, preferences, and specifications that best address the problem. The following situation illustrates the importance of designing search statements to address specific information problems.

> Situation: You are a researcher and have been asked to gather research studies on designing, developing, and conducting an evaluation of an occupational education program. Such research studies are to be used in assessing the effects of occupational education for program planning and program improvement purposes. In addition, information is needed on guidelines, procedures, and techniques used for gathering data that can be used in the evaluation.

An efficient solution to the information problem can be effected only after a specific search statement is formulated to guide the search for relevant material. The basic problem is to identify research studies on the evaluation of occupational education programs.

The search problem could be written as (Visual 1).* This statement provides the searcher with the information upon which to make the decision as to what terms to use in conducting the subject index search.



Identification of Key Words

The next step in the search process is to identify key words in the problem and underline them for later consideration. Two terms that clearly stand out as being descriptive of the problem are the terms "evaluation" and "occupational education." If we find that numerous documents are indexed under these items we may elect to "narrow down" the search statement. To do this, we might ask the following questions:

* What other terms would be either synonymous with or related to our retrieval terms "evaluation" and "occupational education?"

* Do "program evaluation," "program effectiveness," or "cost analysis" pertain to the problem?

* As a substitute for "occupational education," could "vocational education" be used, or "agricultural education," "business education," health education," "home economics education," "distributive education," or "trade and industrial education"?

*The visuals which accompany the text were reduced from the actual transparencies which are available for large group instruction.

Search Strategy

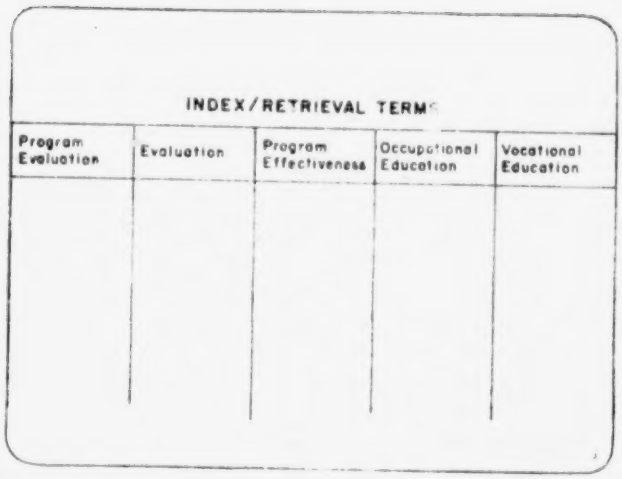
If some, or all, of these terms are appropriate for our search, a systematic means of search for the information is needed.

Spot Search. When one wishes to conduct a spot search that does not require a great amount of depth, a convenient way to locate documents is to list potential index/retrieval terms on a worksheet and search for titles of documents under the specified retrieval terms in the Subject Index of a particular reference publication (see Appendix B-4,5).

For the search on evaluation of occupational education, assume that the following terms are used (Visual 2).

Program Evaluation
Evaluation
Program Effectiveness
Occupational Education
Vocational Education

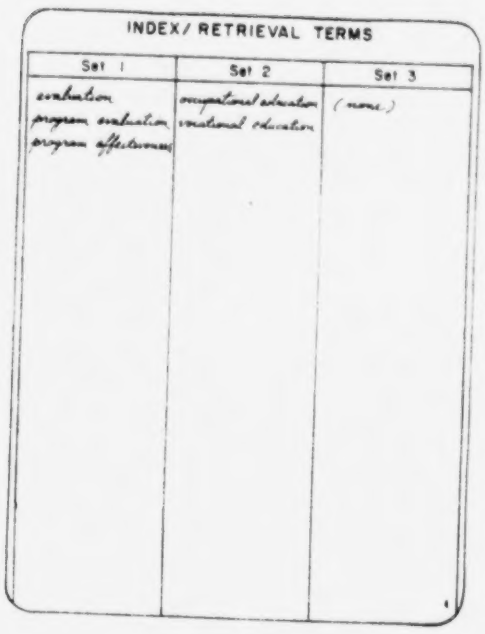
List these terms on the worksheet and search for relevant article titles (Visual 3). After appropriate titles are found, list only the identification or accession numbers (ED, EJ, or VT) and not the titles. These accession numbers are used for cross reference, document locations and document ordering.



After identifying a sufficient number of possible documents, use the accession numbers to locate the abstracts of appropriate documents and review them for relevancy to the search problem.

The Comprehensive Search. When a detailed, comprehensive search is required or if one is conducting a search for another person, a different search approach is often more appropriate. Decisions must be made as to the retrieval terms to use as outlined by the search statement. (The following procedure differs from the previous discussion in that synonymous retrieval terms must be grouped together as a means of organizing a systematic way either of identifying or eliminating specific documents in the search.)

A worksheet can be used to help organize the search (Visual 4). By listing the synonymous terms vertically in the columns,* the search can be broadened. By listing other terms in columns (or sets) to the right of the first column, the search can be limited. The worksheet takes the following form.



In this search problem, assume that we only want information that pertains to the terms listed on the worksheet. The information search is then conducted using the terms "evaluation," "program evaluation," or "program effectiveness" as they pertain to "occupational education" or vocational education."

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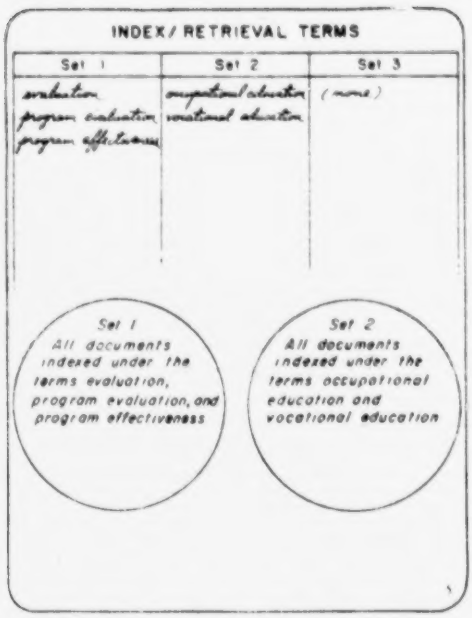
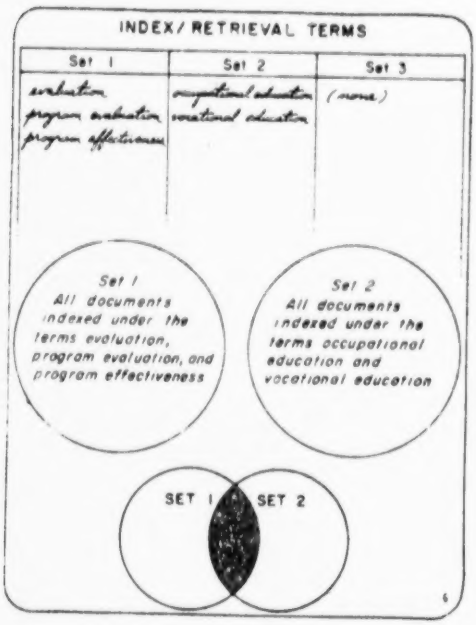
*The term "set" is used throughout this series of visuals as a means of labeling columns.

The available information in this search problem might be illustrated in this way (Visual 5).



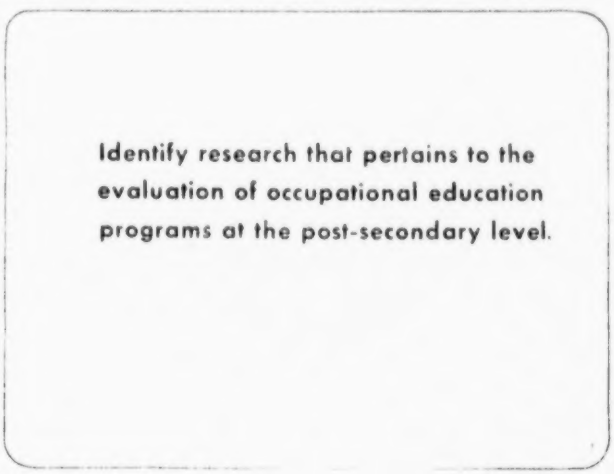
However, the search statement specifies that research reports in these two bodies of available information are acceptable only when an index/retrieval term in "Set 1" is used with "Set 2."

Thus, the information that addresses the search problem as defined through the index terms is illustrated by the overlapping areas of the two circles shown (Visual 6).



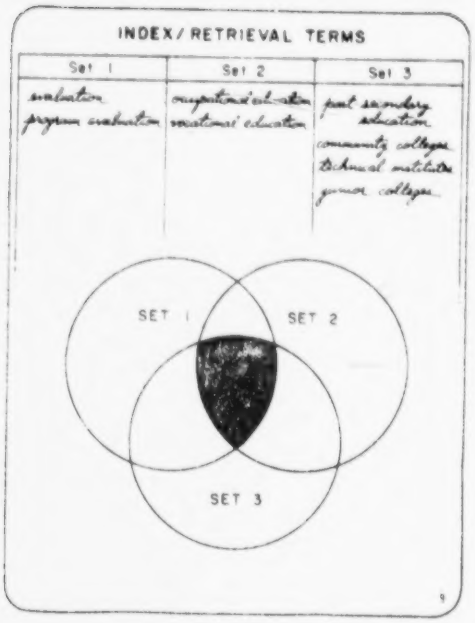
By searching for information using the index terms outlined above, the available research studies can be identified. We have stated that research reports with index terms of "evaluation" or "program evaluation" or "program effectiveness" are sought if they pertain to "occupational education" or "vocational education."

This information search statement can be refined to yield more specific information. Suppose that we want to identify only those evaluation studies on occupational education that relate specifically to post secondary programs. The following search statement would then be in order (Visual 7).



In searching for information at the post-secondary level, terms that might be appropriate include "post-secondary programs," community colleges," "technical institutes," or "junior colleges." The worksheet might take the following form (Visual 8).

This illustration indicates that although the information search will yield a more limited volume of research reports, each of the reports identified is relevant to the search statement (Visual 9).



Thus, if more sets of terms are used, the quantity of information will be smaller and yet more specific as it relates to the search statement. We can assume that an increase in synonymous or related terms in a set increases the number of reports that might be identified; and the more "sets" or terms used in establishing parameters of the information search, the more specific we can be in identifying relevant research reports. So, we broaden or limit our search by the terms we use and by the way in which we use them.

For a further explanation, let us take the broad information problem which was outlined at the beginning of this discussion. Suppose we want research reports that describe means of collecting data that can serve as evaluative criteria in judging the effectiveness of occupational programs. Let us select one criterion--followup studies--that can be used in the evaluation of an occupational program.

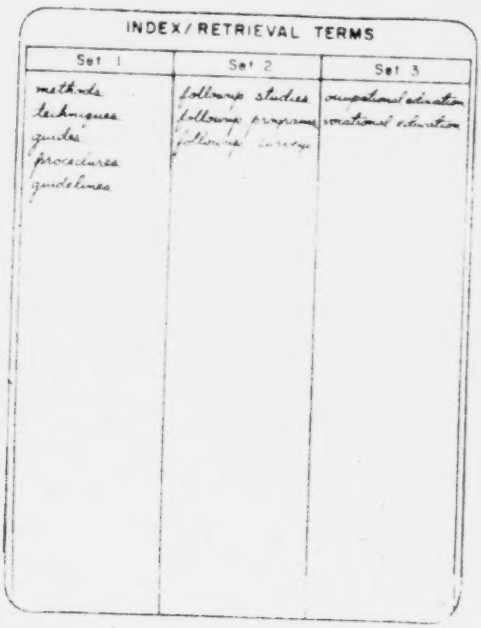
If guidelines, methods, or techniques for use in developing and conducting followup studies on occupational education are needed, the following search statement is appropriate (Visual 10).

Identify documents that will serve as guides or provide methods and techniques used in developing and conducting follow-up studies in occupational education programs.

Selecting Retrieval Terms. Selecting and organizing the appropriate terms to be used in searching for relevant documents calls for decisions on the selection of retrieval terms. The search statement specifies "guides," "methods," and "techniques." Other related terms that might be used are "procedures" and "guidelines." The search statement specifies further that these retrieval terms must pertain to "followup programs" and "followup surveys."

In addition, the search statement calls for documents that deal with occupational education. The term "vocational education" can be used as well as the terms for the service areas of vocational education such as agricultural education, distributive education, business education, health occupations education, and home economics.

The arrangement of these terms for retrieval purposes is illustrated on the following retrieval form (Visual 11).



Thus, by searching for information by means of the above strategy, we should identify abstracts of documents indexed under at least one term in the first "set" if these documents are also indexed under at least one term in each of the other "sets." If documents are identified that are not indexed under at least one term in each of the sets listed on the worksheet, the documents would likely be irrelevant to our problem. The searcher should identify relevant documents by circling common accession numbers as they appear across the specified "sets."

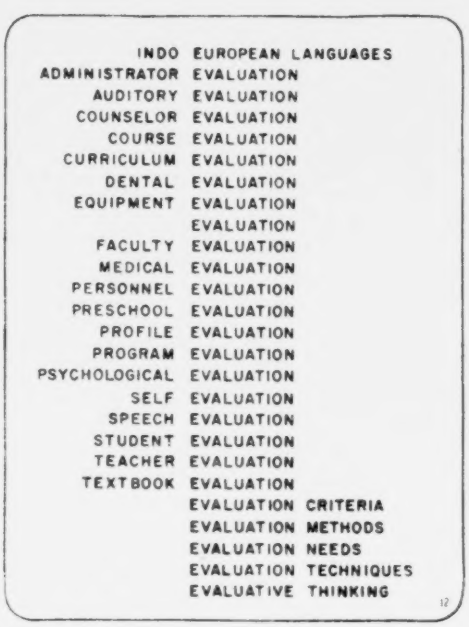
This information search statement (Visual 10) illustrates that precise parameters for an information problem are necessary. The search statement specified the parameters for the information search and also suggested relevant retrieval terms to be used in searching information sources. However, the retrieval terms that are used in the search process might not be appropriate for a given information system such as ERIC. Therefore, one must search a given information system only by employing the terminology that was used to index documents for retrieval purposes.

Converting Retrieval Terms to ERIC Terminology

To be most effective in searching the ERIC system, one needs to convert the retrieval terms of a search strategy to ERIC terminology. The Thesaurus of ERIC Descriptors, an authoritative list of index/retrieval terms on education, has been designed as an aid in labeling concepts and showing the context in which certain concepts are used. By referring to the Thesaurus while developing the search statement, one can compile a comprehensive list of terms relevant to the information problem and also insure that retrieval terms are written in ERIC "language." Before changing non-ERIC terms into ERIC terminology, one needs to become familiar with the Thesaurus.

Thesaurus Format. The Thesaurus consists of two major sections--the "Rotated Descriptor Display" and the "Descriptor Listing."

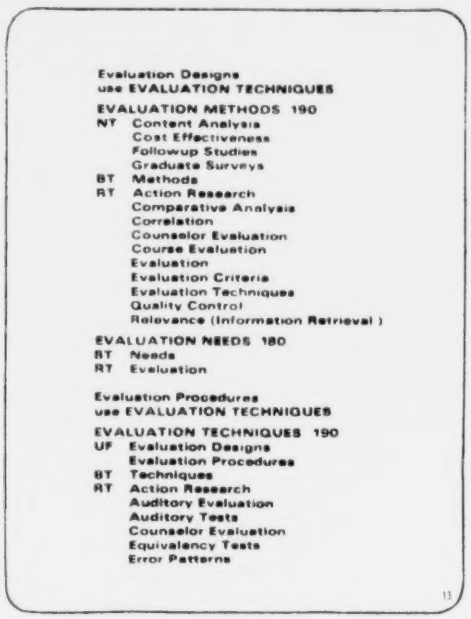
The Rotated Descriptor Display is a list of all the descriptors in the Thesaurus with each element of each descriptor (each word in each multiword term) entered separately in alphabetical order as it is used throughout the Thesaurus (Visual 12).



Thus, every word of every descriptor is listed alphabetically, and every possible combination of the words is listed in the alphabetic array of descriptors. The "Rotated Descriptor Display" is

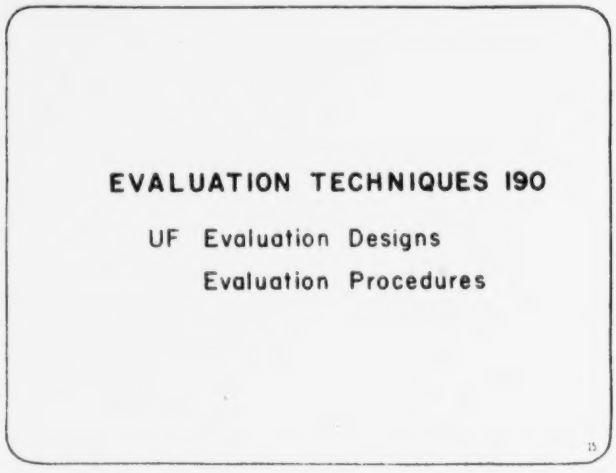
useful in determining all combination usages of a particular descriptive term as the term is used within the ERIC system. The purpose of the "Display," from a searcher's point of view, is to alert him to all possible uses of a particular word. The goal is to suggest other descriptors and to provide a perspective of the contents of the Thesaurus. Using the descriptor--"evaluation"--as presented in the previous information search, an array of terms is listed in the Thesaurus as shown in Visual 12.

The "Descriptor Listing" is used in determining the context within which descriptors are used and to identify related terms or specifically define appropriate retrieval terms for the search strategy (Visual 13). The "Descriptor Listing" includes five notations used to structure and display each type of term. (Only four are shown in the visual.) The five notations are: (1) Use, (2) Used For, (3) NT, (4) BT, and (5) RT.

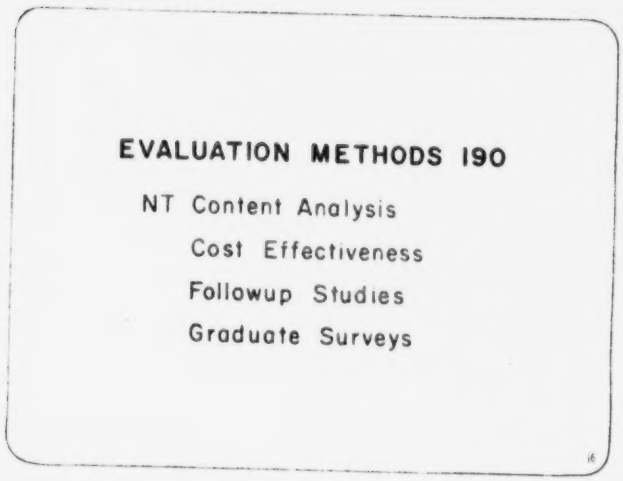


A "Use" entry follows synonyms or near synonyms of descriptors and directs the user to the preferred descriptor for communicating with the system (Visual 14). No documents are indexed by these synonyms nor should any attempt be made to use such terms as valid search terms (i.e., the term "evaluation designs" is not, of itself, a valid search term). The synonyms appear solely to provide as many entry points to the Thesaurus as possible. The user must enter the system with the descriptor denoted under such entry.

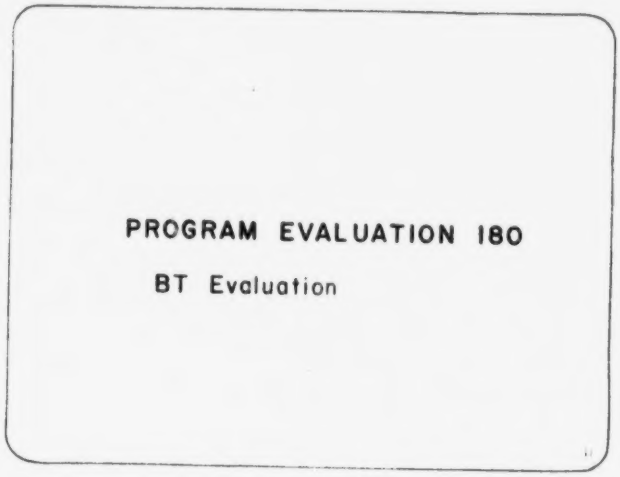
The "Used For" (UF) entry is the reverse of the "USE" entry (Visual 15). The UF entry appears only under a descriptor for which there is a synonym or near synonym in the Thesaurus. The entry tells that the descriptor includes the concept represented by the UF entry. The UF entry adds to the user's understanding of the scope of a descriptor which is "used for" other concepts.



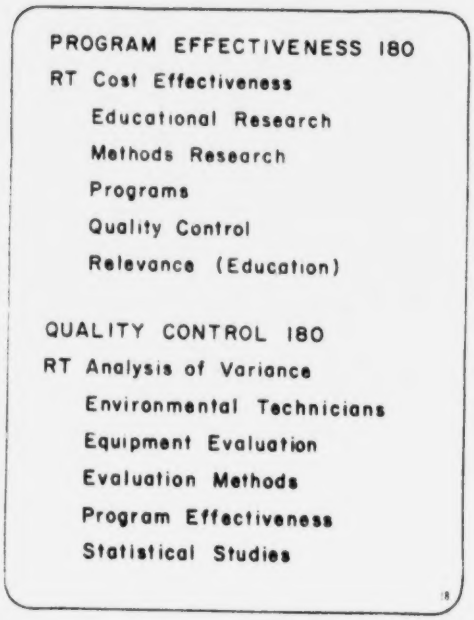
"Narrower Term" (NT) denotes a hierarchical relationship between the main descriptor entry and a descriptor which belongs to the same class but is on a lower level of hierarchy; i.e., the narrower term is more specific (Visual 16).



"Broader Term" (BT) is the second hierarchical notation and the reciprocal of the "Narrower Term" notation (Visual 17). A BT entry indicates that the descriptor is of the same class as the main descriptor entry but that it is on a higher level of hierarchy, i.e., the BT term is more general.

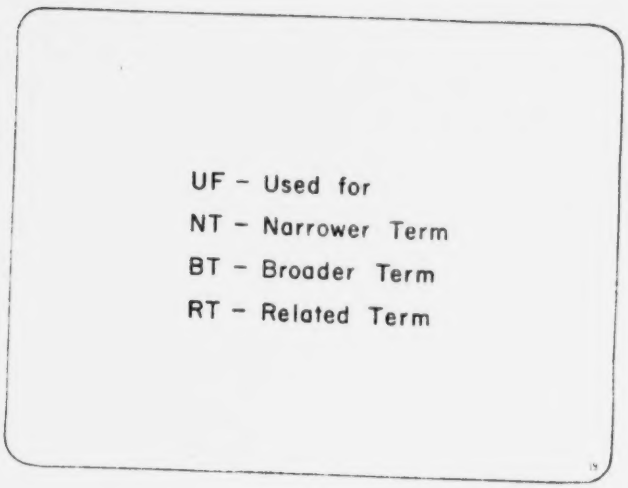


"Related Term" (RT) performs two functions. A term listed as RT clarifies scope by further defining a main entry descriptor entry (Visual 18). This description is accomplished mainly by better defining the context in which the main descriptor entry should be interpreted. The second function of an RT entry is to alert the user to terms other than the main descriptor in which he may be interested. RT entries provide the collaterial word relationships in a thesaurus that would not ordinarily be apparent if the user were to think only in terms of the hierarchical scheme. Visual 18 emphasizes these two functions of the RT relationship.

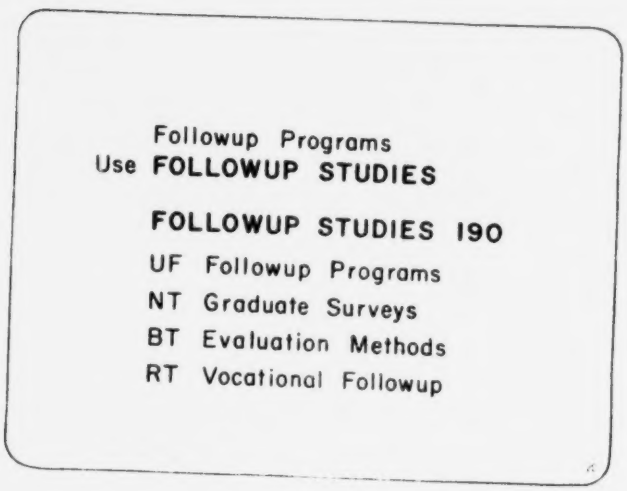


Every hierarchical and collateral entry has a complimentary entry elsewhere in the Thesaurus. That is, for every "Use" entry, there is a complimentary UF entry; for every NT entry, there is a complimentary BT entry; conversely, for every BT entry, there is a complimentary NT entry; and for every RT entry, there is a complimentary RT entry.

The order in which the notations appear under a descriptor, when appropriate, is as follows (Visual 19).

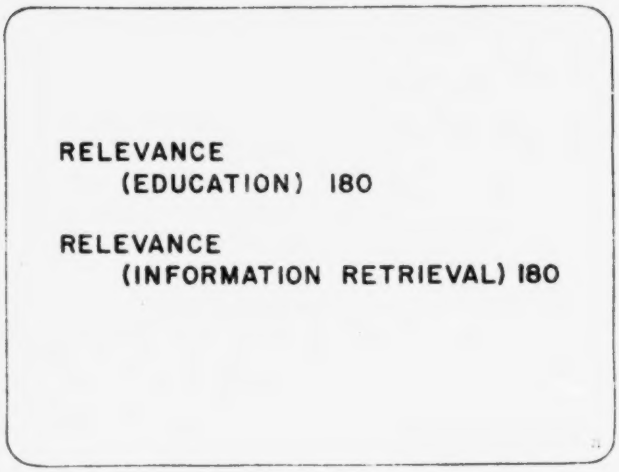


Each of the five notations previously discussed as illustrated by using the following example (Visual 20).



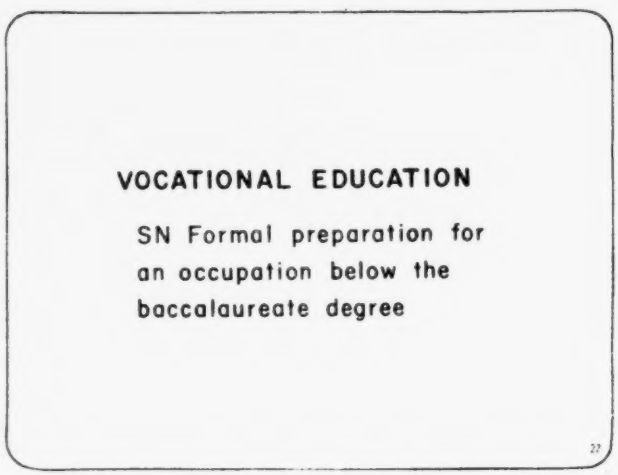
Three additional notations are found in the Thesaurus and need clarification. These notations are parenthetical qualifiers, scope notes, and the descriptor group categories with their respective three-digit group code number.

A number of terms in the Thesaurus are followed by a parenthetical word or words (Visual 21). The purpose of these parenthetical qualifying expressions is to clarify homographs and ambiguities in word meaning and usage, not to define terms. Whenever a parenthetical qualifier is used, it appears as an integral part of its hierarchical and collateral relationship with other descriptors in the Thesaurus.



Occasionally, descriptors have been selected which, because of their broad usage in the language or because of their special usage in fields other than education, require a brief statement of restricted usage.

In such cases, a "Scope Note" (SN) has been provided directly beneath the main descriptor entry (Visual 22). This is not intended as a formal definition and is not considered an integral part of the descriptor. Thus, the SN is only used with the descriptor where it is listed as a main entry.



The "Descriptor Groups" contain a list of all Descriptor Group categories with their respective three-digit group code number (visible to the right of the term) and scope note. The three-digit group code arranges the main entry descriptors into 52 categories according to their usage in education. The Descriptor Group Display is provided for browsing, determining descriptor relationship and usage, and for showing related descriptors to aid in structuring new descriptors. Each Descriptor Group has a list of subject-related descriptors which appear in and are mutually exclusive to that group.

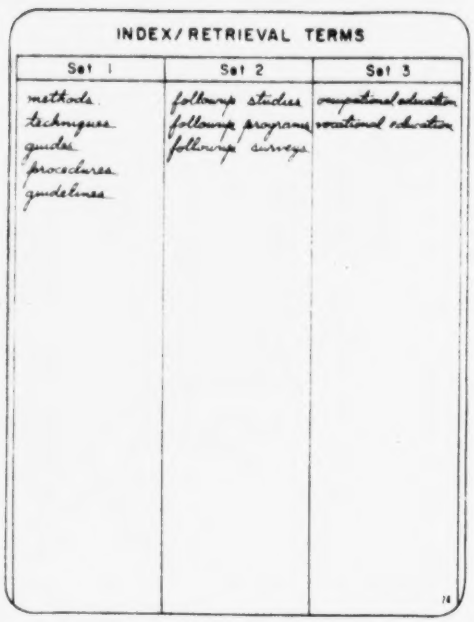
The Conversion Process

Using the above explanations about the organization and purposes of the Thesaurus, the following example presents the process of changing a search statement's retrieval terms to ERIC terminology.

The following search statement is used (Visual 23).

Identify documents that will serve as guides or provide methods and techniques used in developing and conducting follow-up studies in occupational education programs.

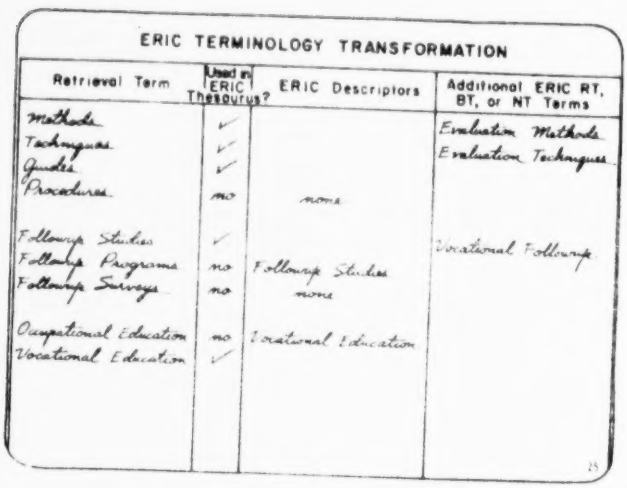
The retrieval terms that were selected for the previous example are presented (Visual 24).



These terms are transformed to ERIC terminology by taking each term and searching the Thesaurus for verification or for synonymous terms. A simple worksheet can be used in the process of transforming terms. List the terms from this Index/Retrieval Terms worksheet and search for the terms in the Thesaurus. If the term is used in the Thesaurus, place a check (✓) in the appropriate column; if not in the Thesaurus, substitute the most synonymous descriptor that can be found.

The user may refer to the Thesaurus in either of two places--"Rotated Descriptor Display" or "Descriptor Listing." The Rotated Descriptor Display offers an advantage in that all of the words of a descriptor are presented in an alphabetic array. If the user begins with the Rotated Descriptor Display, he should followup by using the Descriptor Listing to determine the appropriate context of descriptors as used in indexing and to determine other possible retrieval terms for searching purposes.

The previous example (Visual 24) is transformed to ERIC terminology in (Visual 25).



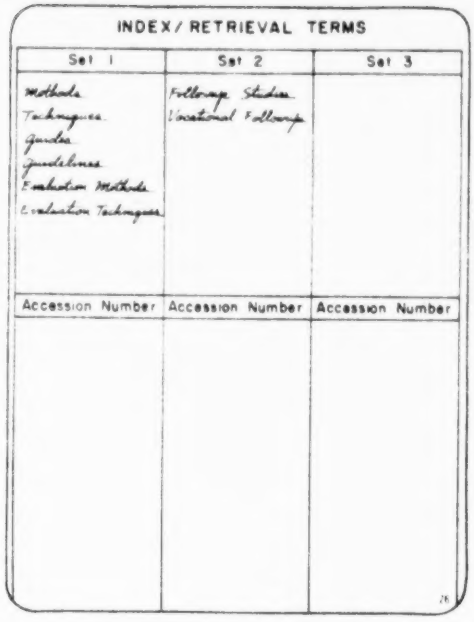
From the first "set" of retrieval terms, four terms were found to be a part of the ERIC language--Methods, Techniques, Guides, and Guidelines. For the term--procedures--the Thesaurus gave a "Use" term of "Teaching Procedures." However, "Teaching Procedures" is not appropriate for the search statement. Two additional terms were identified as relevant to the search statement--"Evaluation Methods" and "Evaluation Techniques." The two related terms will be added as retrieval terms in the search.

In the second "set" of retrieval terms, "Followup Studies," was found in the Thesaurus. For "Followup Programs," the Thesaurus gives the "Use" term--"Followup Studies." A related term that was identified as relevant to the search problem was "Vocational Followup."

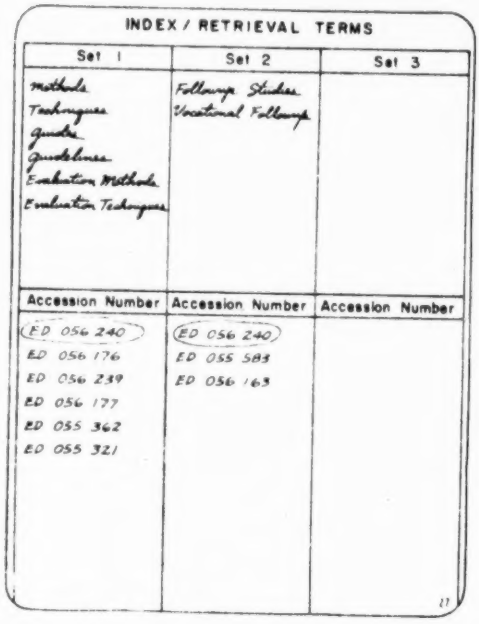
In the third "set" of retrieval terms, the nearest term to "Occupational Education" in the Thesaurus is "Occupational Training" which is not an ERIC term. The "Use" term for "Occupational Training" is "Vocational Education." Thus, "Vocational Education" is the appropriate term to use. (The search can be broadened by using the NT terms under "Vocational Education," but they are not used in this example.)

By compiling the appropriate ERIC terms as found in the Thesaurus, a new "Index/ Retrieval Term" worksheet should be used in searching the ERIC system for documents pertinent to the information problem (Visual 26).

The information search is continued by locating the appropriate ERIC Indexes and manually searching the "Subject Indexes" for appropriate accession numbers.



The accession numbers can be listed in the column below each "set" of retrieval terms (Visual 26). An accession number that appears in both columns under the retrieval terms should be appropriate for retrieving as a relevant document in the search. The worksheet shown in Visual 27 provides an illustration of document accession numbers that are appropriate for the search statement. The accession numbers that appear in both Set 1 and Set 2 are circled*. These documents should be relevant to the information problem.



*The "Set 3" column of the worksheet is used only when the search is limited to a very narrow and specific topic. Three sets of terms are often used in computer searching (which will be discussed later).

OBTAINING DESIRED DOCUMENTS

Whether identifying relevant titles by computer or manual searching, the searcher needs to review the resumes to determine appropriate material for solving the information problem. This phase is probably the simplest step in the search process. If a computer search was used, the resumes were printed in the output (see Visual 28).

SEARCH IDENTIFIER 0001

ACCESSION NUMBERS: ED046746 SE010651

PUBLICATION DATE: 70

TITLE: POLLUTION: PROBLEMS, PROJECTS & MATHEMATICAL EXERCISES, GRADES 6-9.

PERSONAL AUTHOR: HENDERSON, GEORGE L.; AND OTHERS

INSTITUTION CODE: BBB01041

SPONSORING AGENCY CODE: BBB04607; ZQU97875

DESCRIPTOR: *ECOLOGY; ENVIRONMENTAL EDUCATION; INSTRUCTION; *MATHEMATICAL APPLICATIONS; POLLUTION; *PRACTICAL MATHEMATICS; *PROBLEM SETS; *SECONDARY SCHOOL MATHEMATICS

EDRS PRICE: EDRS PRICE MF-$0.65 HC-$3.29

DESCRIPTIVE NOTE: 88P.

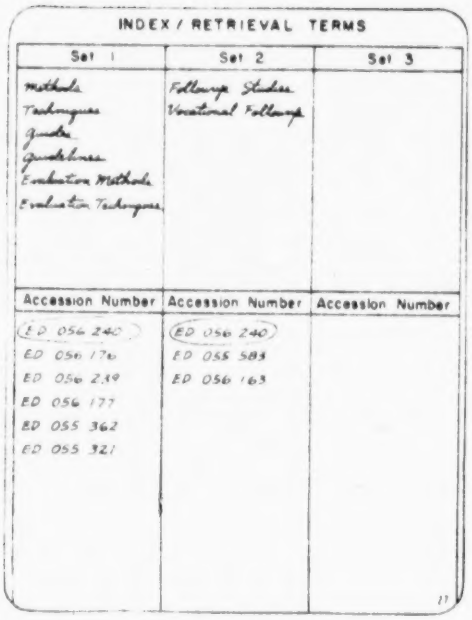
ISSUE: RIEMAY71

THIS SOURCEBOOK CONTAINS MATHEMATICAL EXERCISES, PROBLEMS, AND PROJECTS CONCERNING POLLUTION WHICH ARE ACCESSIBLE FOR STUDENTS IN GRADES 6-9. THE EXERCISES, WHICH ARE DESIGNED TO IMPROVE COMPUTATIONAL SKILLS, ARE CLASSIFIED ACCORDING TO TOPICS USUALLY TAUGHT IN THE MATHEMATICAL CURRICULUM OF THE MIDDLE SCHOOL. (CT)

INSTITUTION NAME: WISCONSIN STATE DEPT. OF PUBLIC INSTRUCTION, MADISON. DIV. OF INSTRUCTIONAL SERVICES.

SPONSORING AGENCY NAME: WISCONSIN MATHEMATICS COUNCIL, MADISON.; WISCONSIN STATE DEPT. OF PUBLIC INSTRUCTION, MADISON

If manual searches were used, a list of accession numbers has been generated (see Visual 27) to aid in locating the resumes.



Locating Document Resumes

1. Make note of your lowest accession number; this is your starting point for locating and scanning the resumes.

2. For the sake of convenience, move through the list of accession numbers and read the corresponding resumes in some sort of numerical order. Look up and read all of the ED 045 000's, ED 046 000's, ED 047 000's and so forth until you finish your last ED number series. Then, look up and read all the EJ and VT resumes in numerical order.

3. Cross out the numbers on your list that you have rejected, leaving ED, EJ, and VT numbers of those documents you would like to order and read.

4. In most cases, the ED and VT numbers are all you have to keep track of; however, watch for those resumes that say "Document not available from EDRS," and make a note of them on a separate sheet. To locate full-text documents identified with VT numbers, one should refer to the resumes in individual issues of AIM and ARM for instructions.

5. In the case of the EJ resumes, you will have to keep track of Journal Title, Volume and Issue Number, Article Title, and Author. Also make a note of these on a separate sheet.

Remember, the resumes are only summaries of what is contained in the documents. However, there may be sufficient information in a resume to satisfy a need for very general information. In addition to the document abstract or annotation, all the bibliographic information you need is included in the resumes.

Locating Full-Text Documents

You now have a list of documents to review. Entire ERIC microfiche collections are maintained by many university and college libraries, schools and supplementary educational centers, state education agencies, ERIC Clearinghouses, Research Coordinating Units, Regional Educational Laboratories, and other education-related institutions. A resume of an ERIC document contains information on the availability of the full text report from which the abstract was developed. If the document is available from the ERIC Document Reproduction Service (EDRS), the full-text of the report can be viewed on microfiche from the ERIC collection or copies can be ordered from EDRS in two forms:

1. Microfiche (MF) - 4" x 6" sheet of microfilm on which up to 70 pages of text are reproduced. (Use of microfiche requires a microfiche reader.)

2. Hard copy (HC) - reproduction of the document on paper.

Many agencies have the capability of duplicating microfiche and/or making paper copies from the microfiche.

Information on availability of documents, i.e., ERIC accession code number, source of original document, number of pages, cost, date of publication, and a complete bibliographic citation for each processed document is included in the most current issues of the ERIC reference publications. Correspondence and orders for MF and HC should be addressed to:

ERIC Document Reproduction Service
Post Office Drawer O
Bethesda, Maryland 20014

Institutions housing the ERIC microfiche collections provide microfiche readers for reviewing the documents identified in the

information search.

Microfiche readers are available in various sizes and prices--from a small portable machine, for reading only, to a more elaborate reader-printer model that can produce paper copies at the touch of a button. Prices vary accordingly, from a little over $50 to $1,000.

To stay abreast of ERIC developments, check the back pages of RIE each month for announcements, or visit the ERIC exhibits at a professional association meeting.

In addition to users of the ERIC system, there are also many contributors. Anyone who has prepared a report, speech, or paper can have it considered for national dissemination through ERIC by sending two copies of the material to:

ERIC
U.S. Office of Education
400 Maryland Avenue S.W.
Washington, D.C. 20202

If material is related specifically to vocational and technical education, copies may be sent directly to:

Information Acquisitions
ERIC Clearinghouse on Vocational
and Technical Education
1960 Kenny Road
Columbus, Ohio 43210

COMPUTER SEARCHING

The computer search is different from manual searching in that it can be designed to be more specific in retrieving information. QUERY, an ERIC computerized information retrieval program, capable of retrieving and disseminating information from diversely formatted files maintained on magnetic tape, disk, or data cell, enables the user to describe a given information search in ERIC terminology and retrieve the desired information. Although descriptors assigned to a document by an indexer are most commonly used as retrieval terms, publication date, sponsoring agency, author, identifiers, or key words in the abstract may also be used.

Identifying the Problem

The process of searching the ERIC system by computer is basically the same as the procedure for searching the system manually. The first step involves writing a concise, specific summary of the information problem, including the major content area (information systems, cooperative education) and subtopics, specific requirements such as instructional level (secondary grades, grade 1, or grade 12), form of documents (teaching guides, literature reviews, or bibliographies), and any other specifications that define the search. Whether one is thumbing through a card catalog or listing descriptors as retrieval terms for a computer search of ERIC, he is making decisions about the needed information:

"Do I want information on this particular topic (program evaluation)?"
"In what field of education do I want information (vocational education or science education)?"
"Do I want information for a particular instructional level (post-secondary or elementary)?"

Whether the searcher reaches these decisions by writing the requirements on paper or storing them in his mind, specifications that guide the search process are made. Thus, the major difference between a computer search and a manual search of ERIC is that the computer locates document resumes for the searcher by using his specifications rather than requiring the searcher to locate the resumes manually.

Designing the Search

The logic utilized in computer searching of ERIC materials evolves from a set of "profile" terms that describe a given subject for which references are desired. These terms are manipulated by means of search strategies to produce a yield of references that match as closely as possible the overall profile design.

The search strategy consists of an arbitrary number of descriptive terms that can be searched by the computer according to a variety of specified combinations and instructions. The chart below summarizes the major combinations, their characteristics, and requirements for a "computer hit," i.e., a match between the profile and the descriptors found in the search. Whether a search strategy is broad or narrow depends on the terms themselves and the specific problem.

In Visual 29, the letters A, B, C, D, and E represent arbitrary descriptive terms that can be searched by the computer according to a variety of combinations and instructions.

Descriptive terms to be searched as instructed	Degree of Search Strategy	Resultant hits
Example 1 +A/B/C/D/E	Broad, relatively non-restrictive, loose	A hit results when only one of the terms searched is found in a single citation
Example 2 +A +B +C	Narrow, precise, tight	A hit results only when all three terms appear in a single citation
Example 3 +A/B/C +D/E	Restrictive, but not as restrictive as Example 2	A hit results only when one or more terms in each + group appears in a single citation. Thus, A or B or C plus D or E produces a hit
Example 4 +A/B +#C +#D	Restrictive but not as restrictive as Example 2	A hit occurs only when A or B occurs in a citation, and C and D do not appear in the citation

Computer Instruction Codes + = and / = or +# = and not

Note: A hit appears only once in a print-out, even though it may be cited by more than one of the search terms

To illustrate the preparation of a computer request, the following search statement is used (Visual 30).

Identify documents that will serve as guides or provide methods and techniques used in developing and conducting follow-up studies in occupational education programs.

Previously, retrieval terms were identified to guide the information search and were converted to ERIC terminology (Visual 31).

INDEX/RETRIEVAL TERMS

Set 1	Set 2	Set 3
Methods Techniques Guides Guidelines Evaluation Methods Evaluation Techniques	Followup Studies Vocational Followup	Vocational Education

SUMMARY

Whether information retrieval is to be done manually or by computer, it should be systematic, always with a sense of direction. This study unit has guided us through the retrieval process from identification of the problem to the selection of appropriate documents in the ERIC system. The following 10 steps are offered as a means of summarizing this information retrieval process (Visual 32).

REVIEW OF INFORMATION RETRIEVAL PROCEDURES

1. STATE THE PROBLEM CLEARLY
2. FROM THE STATEMENT OF THE PROBLEM, IDENTIFY AND LIST KEY WORDS AND CONCEPTS
3. VERIFY DESCRIPTORS IN ERIC'S THESAURUS (optional)
4. ENTER THE SUBJECT INDEX OF ERIC REFERENCE PUBLICATION UNDER EACH OF THE KEY TERMS
5. IDENTIFY POTENTIALLY RELEVANT ABSTRACTS
6. REVIEW ABSTRACTS OF DOCUMENTS
7. OBTAIN MICROFICHE FROM FILES OR BY REQUISITIONING
8. REVIEW MICROFICHE ON READER
9. RECORD INFORMATION, REQUEST DOCUMENTS, REQUEST DUPLICATE MICROFICHE, OR OBTAIN HARD COPY AS DESIRED
10. USE THE INFORMATION

APPENDIX A

ERIC Terminology

Accession Number - A number assigned to a document in the ERIC system to facilitate identification and retrieval (e.g., ED, VT, AC).

AIM - Abstracts of Instructional Materials in Vocational and Technical Education, published quarterly by The Center for Vocational and Technical Education, containing abstracts and bibliographic data on materials used by teachers in presenting information to students or materials used by students in connection with classroom instruction.

ARM - Abstracts of Research Materials in Vocational and Technical Education, published quarterly by The Center for Vocational and Technical Education, containing abstracts and bibliographic data on research and research-related materials.

Author Index - Indexes in RIE and CIJE listing the documents in that particular issue alphabetically by the person's last name. In AIM and ARM it is called the Personal and Institutional Author Index.

CIJE - Current Index to Journals in Education, published monthly by CCM Information Corporation, providing a guide to periodical literature covering over 500 educational and related journals.

Cross Reference Index - An accession number section in the back of each issue of RIE which cross references the ERIC Clearinghouse number (e.g., VT) to the ERIC Document (ED) numbers for resumes published in that particular issue. Readers who desire to trace documents for which they have only clearinghouse accession numbers as references may find the applicable abstracts.

ED Number - The ERIC accession number sequentially assigned to documents as they are processed for RIE.

EDRS - ERIC Document Reproduction Service, Post Office Drawer O, Bethesda, Maryland 20014. Supplies hard copy reproduction and/or microfiche of documents announced in ERIC.

EJ Number - The accession number sequentially assigned to journal articles as they are processed for CIJE.

ERIC - Educational Resources Information Center, a national educational information system developed by the U.S. Office of Education.

ERIC Descriptors - Subject terms which characterize substantive content of a document. Only the major terms, preceded by an asterisk, are printed in the Subject Index. They are sometimes referred to as retrieval terms.

Manual Searching - Information searching and retrieval by personal inspection, or methods other than computer assisted.

Microfiche (MF) - Four inch by six inch sheets of microfilm on which up to 70 pages of text are reproduced.

QUERY - An ERIC computerized information retrieval program capable of retrieving and disseminating information from diversely formatted files maintained on magnetic tape, disk, or data cell. It enables the user to describe a given information search in ERIC terminology and retrieve the desired information.

Retrieval Terms - Subject terms which characterize substantive content of a document. More often referred to as descriptors.

RIE - Research in Education, a monthly abstract journal published by the U.S. Office of Education, reporting research reports and related documents of educational significance indexed by subject, author, and institution.

Search Statement - A concise statement identifying the parameters of the search problem and then listing the specific needs, preferences, and specifications that best address the problem.

Search Problem - A situation or set of circumstances in which a user finds himself, where additional information is required to make a decision or arrive at a solution.

Search Strategy - A plan or method followed by a searcher in systematically going from a search problem to the identification of information appropriate for its solution.

Set - A term used in this study guide to label columns of related retrieval terms.

Subject Index - Indexes in RIE and CIJE listing the documents in that particular issue alphabetically by the major or asterisked descriptors. In AIM and ARM it is called the Subject and Identifier Index.

Thesaurus - The Thesaurus of ERIC Descriptors serves as the authoritative guide for assigning the descriptive terms used to index the various reports and journal articles entered into the ERIC information system.

VT Number - The accession number sequentially assigned to documents as they are processed by the ERIC Clearinghouse on Vocational and Technical Education.

APPENDIX B

Sample of Formats of Access Products

Sample pages from the various ERIC access products are displayed in this appendix to familiarize the user with the resume format, Subject and Identifier Index, and Personal and Institutional Author Index of RIE, CIJE, AIM, and ARM.

They may also be converted to transparencies; and may be used frequently through the lecture/discussion. They are referred to within the text when deemed particularly pertinent to the discussion.

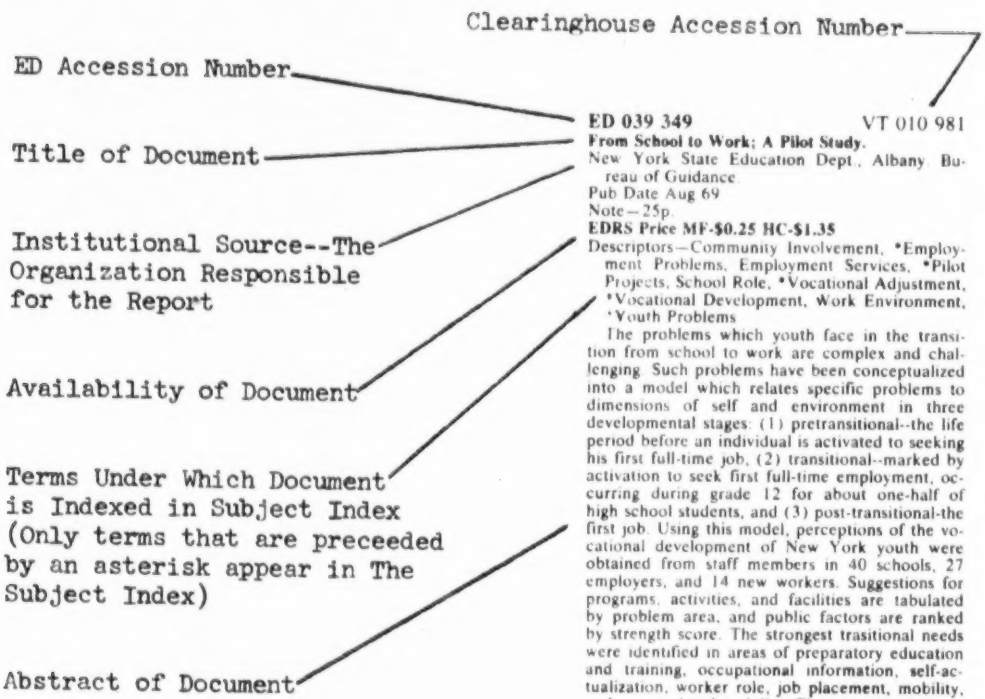
APPENDIX B-1

Format of

Research in Education (RIE)

Document Resume

ED 039 349


Clearinghouse Accession Number
ED Accession Number
Title of Document
Institutional Source--The Organization Responsible for the Report
Availability of Document
Terms Under Which Document is Indexed in Subject Index (Only terms that are preceeded by an asterisk appear in The Subject Index)
Abstract of Document

ED 039 349 VT 010 981

From School to Work; A Pilot Study.

New York State Education Dept., Albany. Bureau of Guidance.

Pub Date Aug 69

Note—25p.

EDRS Price MF-$0.25 HC-$1.35

Descriptors—Community Involvement, *Employment Problems, Employment Services, *Pilot Projects, School Role, *Vocational Adjustment, *Vocational Development, Work Environment, *Youth Problems

The problems which youth face in the transition from school to work are complex and challenging. Such problems have been conceptualized into a model which relates specific problems to dimensions of self and environment in three developmental stages: (1) pretransitional--the life period before an individual is activated to seeking his first full-time job, (2) transitional--marked by activation to seek first full-time employment, occurring during grade 12 for about one-half of high school students, and (3) post-transitional-the first job. Using this model, perceptions of the vocational development of New York youth were obtained from staff members in 40 schools, 27 employers, and 14 new workers. Suggestions for programs, activities, and facilities are tabulated by problem area, and public factors are ranked by strength score. The strongest trasitional needs were identified in areas of preparatory education and training, occupational information, self-actualization, worker role, job placement, mobility, and occupational mobility. There was no attempt to investigate causative factors; however, some causal inferences are drawn. Recommendations are included. (CH)

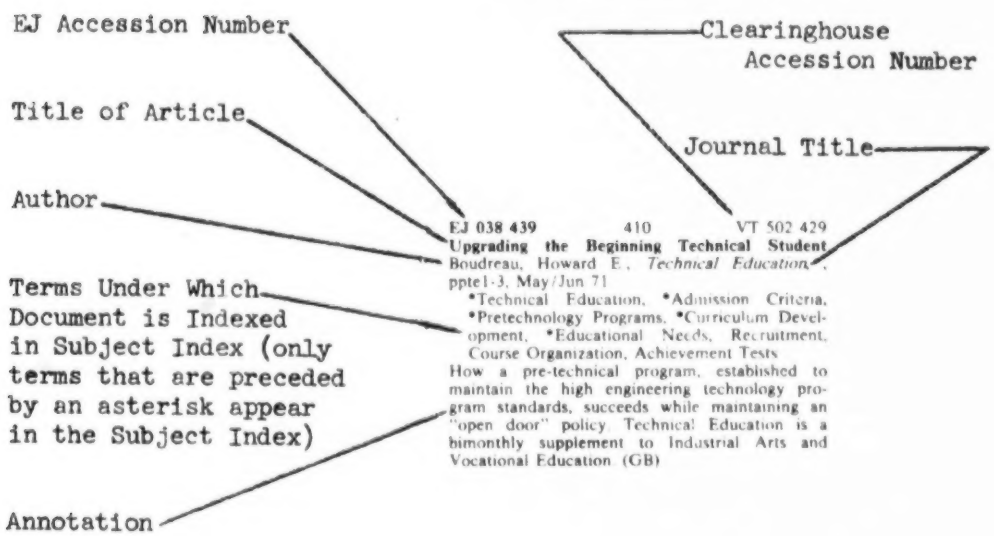
APPENDIX B-2

Format of

Current Index to Journals in Education (CIJE)

Main Entry

EJ 038 439


EJ Accession Number
Clearinghouse Accession Number
Title of Article
Journal Title
Author
Terms Under Which Document is Indexed in Subject Index (only terms that are preceded by an asterisk appear in the Subject Index)
Annotation
EJ 038 439 410 VT 502 429
Upgrading the Beginning Technical Student.
Boudreau, Howard E., Technical Education, ppte1-3, May/Jun 71
*Technical Education, *Admission Criteria, *Pretechnology Programs, *Curriculum Development, *Educational Needs, Recruitment, Course Organization, Achievement Tests
How a pre-technical program, established to maintain the high engineering technology program standards, succeeds while maintaining an "open door" policy. Technical Education is a bimonthly supplement to Industrial Arts and Vocational Education (GB)

The main Entry Section contains the complete bibliographic citation for each processed journal article.

The CIJE indexes provide access to journal article citations listed in the Main Entry Section.

Source Journal Index . . . lists the journals from which articles are reviewed and cited monthly.

Subject Index . . . lists titles of articles according to descriptive retrieval terms contained in the Main Entry citations.

Author Index . . . lists authors' names along with title of article and EJ accession number.

Journal Contents Index . . . lists source journals along with titles of articles processed from each journal.

APPENDIX B-3

Format of

ARM and AIM Document Resume

Clearinghouse Accession Number--"VT" Denotes Vocational-Technical

ERIC Document Accession Number--Resumes of Documents with "ED" Prefix Are Listed in Research in Education.

Personal Author(s)

Title of Document

Institutional Source--The Organization Responsible for the Report (Bureau of Labor Statistics is listed in the Personal and Institutional Author Index)

Availability of Document

Terms Under Which Document is Indexed in Subject Index--(only terms that are preceeded by an asterisk appear in the Subject Index)

Abstract of Report

VT 014 005 ED 056 185
SMITH, GERARD C.; CROWLEY, MICHAEL F.
OCCUPATIONAL MANPOWER AND TRAINING NEEDS: INFORMATION FOR PLANNING TRAINING PROGRAMS FOR THE 1970'S.

BUREAU OF LABOR STATISTICS (DOL), WASHINGTON, D.C. DIV. OF MANPOWER AND OCCUPATIONAL OUTLOOK.
EDRS PRICE MF-$.65 HC-$3.29.
BULL-1701
SUPERINTENDENT OF DOCUMENTS, U.S. GOVERNMENT PRINTING OFFICE, WASHINGTON, D.C. 20402 ($.75)
PUB DATE - 71 87P.

DESCRIPTORS - *EMPLOYMENT PROJECTIONS; *MANPOWER NEEDS; EDUCATIONAL PLANNING; *EDUCATIONAL NEEDS; EMPLOYMENT TRENDS; *EMPLOYMENT STATISTICS; *EDUCATIONAL SUPPLY; VOCATIONAL EDUCATION

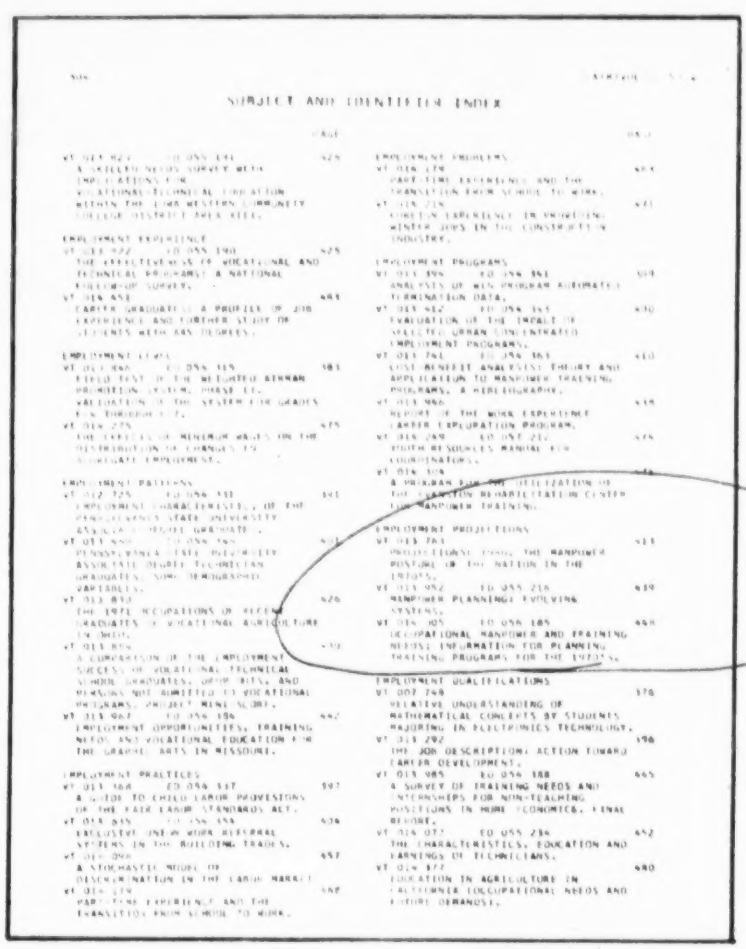
ABSTRACT - THIS BULLETIN SUMMARIZES THE BUREAU OF LABOR STATISTICS EMPLOYMENT PROJECTIONS WHICH ARE AVAILABLE AND DISCUSSES THEIR USE IN LOCAL EDUCATIONAL PLANNING. INCLUDED ARE MATERIAL ON PROJECTIONS OF FUTURE MANPOWER NEEDS, INFORMATION ON OCCUPATIONAL TRAINING PROGRAMS, AND STATISTICS BY OCCUPATION ON MANPOWER NEEDS, ANNUAL OPENINGS, TRAINING METHODS, AND NUMBERS OF GRADUATES. (BH)

APPENDIX B-4

ARM and AIM

Subject and Identifier Index

Subject Index searches are conducted when specific document titles, document accession numbers or authors' names are not known. Example: If the search strategy developed for a Subject Index search specifies that documents indexed under the term "Employment Projections" be identified, the citations from ARM/Volume 5, Number 2 would appear as follows:



SUBJECT AND IDENTIFIER INDEX

EMPLOYMENT EXPERIENCE
VT 013 922 ED 055 190 525
THE EFFECTIVENESS OF VOCATIONAL AND TECHNICAL PROGRAMS: A NATIONAL FOLLOW-UP SURVEY.
VT 016 458 489
CAREER GRADUATES: A PROFILE OF JOB EXPERIENCE AND FURTHER STUDY OF STUDENTS WITH AAS DEGREES.

EMPLOYMENT LEVEL
VT 013 904 ED 056 115 181
FIELD TEST OF THE WEIGHTED KERNAN PROMOTION SYSTEM, PHASE II: VALIDATION OF THE SYSTEM FOR GRADES E-4 THROUGH E-7.
VT 014 275 425
THE EFFECTS OF MINIMUM WAGES ON THE DISTRIBUTION OF CHANGES IN HOURLY EARNINGS.

EMPLOYMENT PATTERNS
VT 012 725 ED 056 111 161
EMPLOYMENT CHARACTERISTICS OF THE PENNSYLVANIA STATE UNIVERSITY ASSOCIATE DEGREE TECHNICIAN GRADUATES: SOME BENCHMARK FINDINGS.
VT 013 893 426
THE 1972 OCCUPATIONS OF RECENT GRADUATES OF VOCATIONAL AGRICULTURE IN OHIO.
VT 013 894 432
A COMPARISON OF THE EMPLOYMENT SUCCESS OF VOCATIONAL TECHNICAL SCHOOL GRADUATES, DROP-OUTS, AND PERSONS NOT ADMITTED TO VOCATIONAL PROGRAMS, PROJECT MINE SCOPE.
VT 013 907 ED 056 194 442
EMPLOYMENT OPPORTUNITIES, TRAINING NEEDS AND VOCATIONAL EDUCATION FOR THE GRAPHIC ARTS IN MISSOURI.

EMPLOYMENT PRACTICES
VT 013 904 ED 056 147 397
A 'JOB TO CHILD LABOR PROVISIONS OF THE FAIR LABOR STANDARDS ACT.
VT 013 845 ED 056 156 436
EXCLUSIVE UNION HIRING HALL SYSTEMS IN THE BUILDING TRADES.
VT 013 906 457
A STOCHASTIC MODEL OF DISCRIMINATION IN THE LABOR MARKET
VT 014 174 542
PART-TIME EXPERIENCE AND THE TRANSITION FROM SCHOOL TO WORK.

EMPLOYMENT PROBLEMS
VT 014 174 542
PART-TIME EXPERIENCE AND THE TRANSITION FROM SCHOOL TO WORK.
VT 014 214 461
CHICANO EXPERIENCE IN ENGINEERING: WINTER JOBS IN THE CONSTRUCTION INDUSTRY.

EMPLOYMENT PROGRAMS
VT 013 894 ED 056 161 519
ANALYSIS OF MDTA PROGRAM AUDIMATCH TERMINATION DATA.
VT 013 912 ED 056 145 430
EVALUATION OF THE IMPACT OF SELECTED URBAN CONCENTRATED EMPLOYMENT PROGRAMS.
VT 013 761 ED 056 165 410
COST-BENEFIT ANALYSIS: THEORY AND APPLICATION TO MANPOWER TRAINING PROGRAMS, A BIBLIOGRAPHY.
VT 013 906 435
REPORT OF THE WORK EXPERIENCE CAREER EXPLORATION PROGRAM.
VT 014 249 ED 057 211 475
YOUTH RESOURCES MANUAL FOR COORDINATORS.
VT 014 306 548
A PROGRAM FOR THE UTILIZATION OF THE VOCATION REHABILITATION CENTER FOR MANPOWER TRAINING.

EMPLOYMENT PROJECTIONS
VT 013 761 411
PROJECTIONS 1990: THE MANPOWER OUTLOOK IN THE NATION IN THE 1970'S.
VT 013 952 ED 055 218 439
MANPOWER PLANNING: EVOLVING SYSTEMS.
VT 014 305 ED 056 185 468
OCCUPATIONAL MANPOWER AND TRAINING NEEDS: INFORMATION FOR PLANNING TRAINING PROGRAMS FOR THE 1970'S.

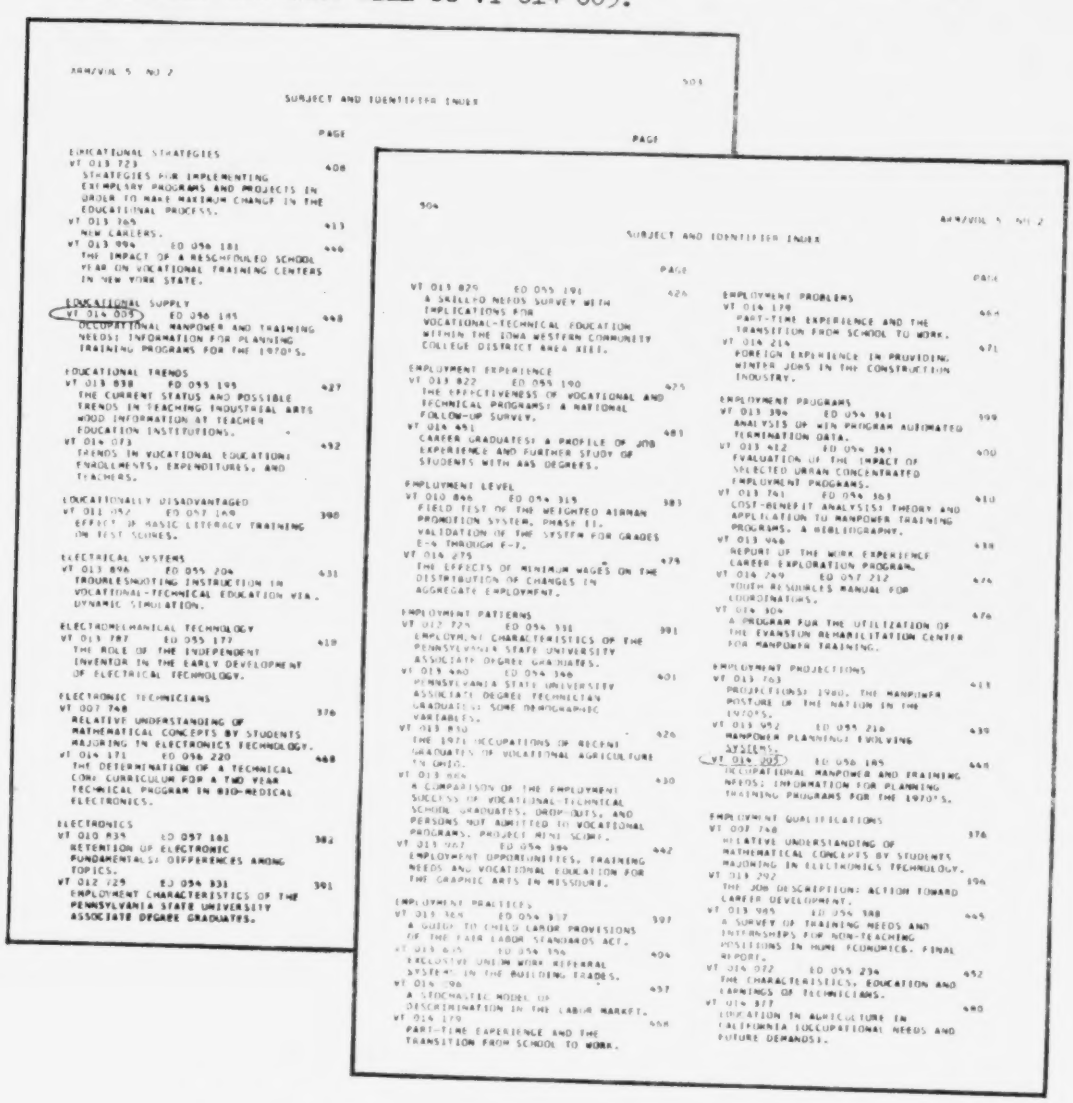
EMPLOYMENT QUALIFICATIONS
VT 007 748 378
RELATIVE UNDERSTANDING OF MATHEMATICAL CONCEPTS BY STUDENTS MAJORING IN ELECTRONICS TECHNOLOGY.
VT 013 792 196
IMS JOB DESCRIPTION: ACTION TOWARD CAREER DEVELOPMENT.
VT 013 985 ED 056 188 665
A SURVEY OF TRAINING NEEDS AND INTERNSHIPS FOR NON-TEACHING POSITIONS IN HOME ECONOMICS, FINAL REPORT.
VT 014 077 ED 055 236 452
THE CHARACTERISTICS, EDUCATION AND EARNINGS OF TECHNICIANS.
VT 014 377 490
EDUCATION IN AGRICULTURE IN CALIFORNIA: OCCUPATIONAL NEEDS AND FUTURE DEMANDS.

APPENDIX B-5

ARM and AIM

Subject and Identifier Index

If the search strategy specifies that documents indexed under the term "Employment Projections" will be acceptable only when they are also indexed under the term "Educational Supply," the only acceptable document will be VT 014 005.



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EDUCATIONAL STRATEGIES
VT 013 723 408
STRATEGIES FOR IMPLEMENTING EXEMPLARY PROGRAMS AND PROJECTS IN ORDER TO MAKE MAXIMUM CHANGE IN THE EDUCATIONAL PROCESS.
VT 013 769 413
NEW CAREERS.
VT 013 994 ED 056 181 440
THE IMPACT OF A RESCHEDULED SCHOOL YEAR ON VOCATIONAL TRAINING CENTERS IN NEW YORK STATE.

EDUCATIONAL SUPPLY
VT 014 005 ED 056 185 448
OCCUPATIONAL MANPOWER AND TRAINING NEEDS: INFORMATION FOR PLANNING TRAINING PROGRAMS FOR THE 1970'S.

EDUCATIONAL TRENDS
VT 013 838 ED 055 199 427
THE CURRENT STATUS AND POSSIBLE TRENDS IN TEACHING INDUSTRIAL ARTS WOOD INFORMATION AT TEACHER EDUCATION INSTITUTIONS.
VT 014 073 432
TRENDS IN VOCATIONAL EDUCATION: ENROLLMENTS, EXPENDITURES, AND TEACHERS.

EDUCATIONALLY DISADVANTAGED
VT 011 052 ED 057 149 398
EFFECT OF BASIC LITERACY TRAINING ON TEST SCORES.

ELECTRICAL SYSTEMS
VT 013 894 ED 055 204 431
TROUBLESHOOTING INSTRUCTION IN VOCATIONAL-TECHNICAL EDUCATION VIA DYNAMIC SIMULATION.

ELECTROMECHANICAL TECHNOLOGY
VT 013 787 ED 055 177 419
THE ROLE OF THE INDEPENDENT INVENTOR IN THE EARLY DEVELOPMENT OF ELECTRICAL TECHNOLOGY.

ELECTRONIC TECHNICIANS
VT 007 748 376
RELATIVE UNDERSTANDING OF MATHEMATICAL CONCEPTS BY STUDENTS MAJORING IN ELECTRONICS TECHNOLOGY.
VT 014 171 ED 056 220 448
THE DETERMINATION OF A TECHNICAL CORE CURRICULUM FOR A TWO YEAR TECHNICAL PROGRAM IN BIO-MEDICAL ELECTRONICS.

ELECTRONICS
VT 010 839 ED 057 161 382
RETENTION OF ELECTRONIC FUNDAMENTALS: DIFFERENCES AMONG TOPICS.
VT 012 729 ED 054 331 391
EMPLOYMENT CHARACTERISTICS OF THE PENNSYLVANIA STATE UNIVERSITY ASSOCIATE DEGREE GRADUATES.

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VT 013 829 ED 055 191 424
A SKILLED NEEDS SURVEY WITH IMPLICATIONS FOR VOCATIONAL-TECHNICAL EDUCATION WITHIN THE IOWA WESTERN COMMUNITY COLLEGE DISTRICT AREA XIII.

EMPLOYMENT EXPERIENCE
VT 013 822 ED 055 190 425
THE EFFECTIVENESS OF VOCATIONAL AND TECHNICAL PROGRAMS: A NATIONAL FOLLOW-UP SURVEY.
VT 014 491 481
CAREER GRADUATES: A PROFILE OF JOB EXPERIENCE AND FURTHER STUDY OF STUDENTS WITH AAS DEGREES.

EMPLOYMENT LEVEL
VT 010 846 ED 054 315 383
FIELD TEST OF THE WEIGHTED AIRMAN PROMOTION SYSTEM, PHASE II. VALIDATION OF THE SYSTEM FOR GRADES E-4 THROUGH E-7.
VT 014 275 479
THE EFFECTS OF MINIMUM WAGES ON THE DISTRIBUTION OF CHANGES IN AGGREGATE EMPLOYMENT.

EMPLOYMENT PATTERNS
VT 012 729 ED 054 331 391
EMPLOYMENT CHARACTERISTICS OF THE PENNSYLVANIA STATE UNIVERSITY ASSOCIATE DEGREE GRADUATES.
VT 013 440 ED 054 346 401
PENNSYLVANIA STATE UNIVERSITY ASSOCIATE DEGREE TECHNICIAN GRADUATES: SOME DEMOGRAPHIC VARIABLES.
VT 013 850 426
THE 1971 OCCUPATIONS OF RECENT GRADUATES OF VOCATIONAL AGRICULTURE IN OHIO.
VT 013 864 430
A COMPARISON OF THE EMPLOYMENT SUCCESS OF VOCATIONAL-TECHNICAL SCHOOL GRADUATES, DROP-OUTS, AND PERSONS NOT ADMITTED TO VOCATIONAL PROGRAMS. PROJECT MIND SCOPE.
VT 013 967 ED 054 394 442
EMPLOYMENT OPPORTUNITIES, TRAINING NEEDS AND VOCATIONAL EDUCATION FOR THE GRAPHIC ARTS IN MISSOURI.

EMPLOYMENT PRACTICES
VT 013 369 ED 054 337 397
A GUIDE TO CHILD LABOR PROVISIONS OF THE FAIR LABOR STANDARDS ACT.
VT 013 635 ED 054 396 404
EXCLUSIVE UNION WORK REFERRAL SYSTEMS IN THE BUILDING TRADES.
VT 014 096 457
A STOCHASTIC MODEL OF DISCRIMINATION IN THE LABOR MARKET.
VT 014 179 468
PART-TIME EXPERIENCE AND THE TRANSITION FROM SCHOOL TO WORK.

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EMPLOYMENT PROBLEMS
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PART-TIME EXPERIENCE AND THE TRANSITION FROM SCHOOL TO WORK.
VT 014 214 471
FOREIGN EXPERIENCE IN PROVIDING WINTER JOBS IN THE CONSTRUCTION INDUSTRY.

EMPLOYMENT PROGRAMS
VT 013 394 ED 054 341 399
ANALYSIS OF WIN PROGRAM AUTOMATED TERMINATION DATA.
VT 013 412 ED 054 343 400
EVALUATION OF THE IMPACT OF SELECTED URBAN CONCENTRATED EMPLOYMENT PROGRAMS.
VT 013 761 ED 054 363 410
COST-BENEFIT ANALYSIS: THEORY AND APPLICATION TO MANPOWER TRAINING PROGRAMS. A BIBLIOGRAPHY.
VT 013 946 438
REPORT OF THE WORK EXPERIENCE CAREER EXPLORATION PROGRAM.
VT 014 249 ED 057 212 474
YOUTH RESOURCES MANUAL FOR COORDINATORS.
VT 014 304 476
A PROGRAM FOR THE UTILIZATION OF THE EVANSTON REHABILITATION CENTER FOR MANPOWER TRAINING.

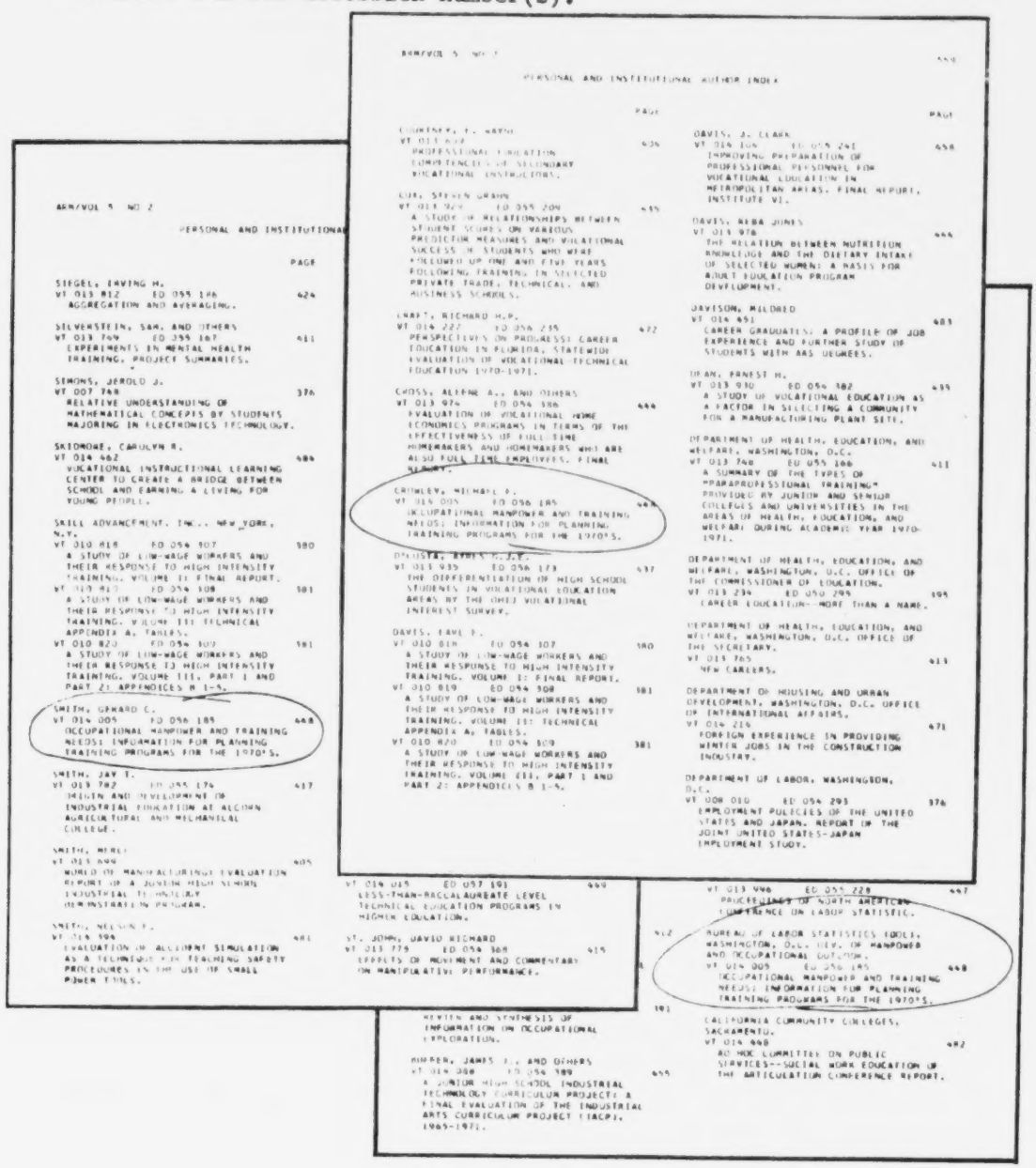
EMPLOYMENT PROJECTIONS
VT 013 763 411
PROJECTIONS 1980: THE MANPOWER POSTURE OF THE NATION IN THE 1970'S.
VT 013 952 ED 055 210 439
MANPOWER PLANNING: EVOLVING SYSTEMS.
VT 014 005 ED 056 185 448
OCCUPATIONAL MANPOWER AND TRAINING NEEDS: INFORMATION FOR PLANNING TRAINING PROGRAMS FOR THE 1970'S.

EMPLOYMENT QUALIFICATIONS
VT 007 748 376
RELATIVE UNDERSTANDING OF MATHEMATICAL CONCEPTS BY STUDENTS MAJORING IN ELECTRONICS TECHNOLOGY.
VT 013 292 396
THE JOB DESCRIPTION: ACTION TOWARD CAREER DEVELOPMENT.
VT 013 965 ED 054 388 445
A SURVEY OF TRAINING NEEDS AND INTERNSHIPS FOR NON-TEACHING POSITIONS IN HOME ECONOMICS. FINAL REPORT.
VT 014 072 ED 055 234 452
THE CHARACTERISTICS, EDUCATION AND EARNINGS OF TECHNICIANS.
VT 014 217 480
EDUCATION IN AGRICULTURE IN CALIFORNIA (OCCUPATIONAL NEEDS AND FUTURE DEMANDS).

ARM and AIM

Author Index

Documents can generally be identified by means of the Author Index when the name of the author is provided. Institutional authors are also indexed in the Author Index when the organization responsible for a report is clearly identifiable. The Author Index lists separately the personal author and the institutional author. Information in Author Index entries also includes the title of a document and its accession number(s).



ARM and AIM Indexes

The following example from ARM/Volume 5, Number 2 illustrates the format of the Personal and Institutional Author Index, Subject Index, and the document resume. Note that each index includes the title of the document VT 014 005. When two authors are listed for a document, each is entered separately in the Author Index.

PERSONAL AND INSTITUTIONAL AUTHOR INDEX

SIEGEL, IRVING H.
VT 013 812 ED 055 186 424
AGGREGATION AND AVERAGING.

SILVERSTEIN, SAM, AND OTHERS
VT 013 749 ED 055 187 411
EXPERIMENTS IN MENTAL HEALTH TRAINING. PROJECT SUMMARIES.

SIMONS, JEROLD J.
VT 007 748 376
RELATIVE UNDERSTANDING OF MATHEMATICAL CONCEPTS BY STUDENTS MAJORING IN ELECTRONICS TECHNOLOGY.

SKINMORE, CAROLYN H.
VT 014 462 404
VOCATIONAL INSTRUCTIONAL LEARNING CENTER TO CREATE A BRIDGE BETWEEN SCHOOL AND EARNING A LIVING FOR YOUNG PEOPLE.

SKILL ADVANCEMENT, INC., NEW YORK, N.Y.
VT 010 818 ED 054 107 380
A STUDY OF LOW-WAGE WORKERS AND THEIR RESPONSE TO HIGH INTENSITY TRAINING. VOLUME II: FINAL REPORT.
VT 010 819 ED 054 108 381
A STUDY OF LOW-WAGE WORKERS AND THEIR RESPONSE TO HIGH INTENSITY TRAINING. VOLUME III: TECHNICAL APPENDIX A: TABLES.
VT 010 820 ED 054 109 381
A STUDY OF LOW-WAGE WORKERS AND THEIR RESPONSE TO HIGH INTENSITY TRAINING. VOLUME III, PART 1 AND PART 2: APPENDICES B 1-5.

SMITH, GERARD C.
VT 014 005 ED 056 185 448
OCCUPATIONAL MANPOWER AND TRAINING NEEDS: INFORMATION FOR PLANNING TRAINING PROGRAMS FOR THE 1970'S.

SMITH, JAY T.
VT 013 782 ED 055 176 417
ORIGIN AND DEVELOPMENT OF INDUSTRIAL EDUCATION AT ALCORN AGRICULTURAL AND MECHANICAL COLLEGE.

SMITH, MERLE
VT 013 699 455
WORLD OF MANUFACTURING: EVALUATION REPORT OF A JUNIOR HIGH SCHOOL INDUSTRIAL TECHNOLOGY DEMONSTRATION PROGRAM.

SMITH, NELSON F.
VT 014 194 491
EVALUATION OF ACCIDENT SIMULATION AS A TECHNIQUE FOR TEACHING SAFETY PROCEDURES IN THE USE OF SMALL POWER TOOLS.

CROWLEY, MICHAEL P.
VT 014 005 ED 056 185 448
OCCUPATIONAL MANPOWER AND TRAINING NEEDS: INFORMATION FOR PLANNING TRAINING PROGRAMS FOR THE 1970'S.

DAVIES, JANE J.
VT 010 818 ED 054 107 380
A STUDY OF LOW-WAGE WORKERS AND THEIR RESPONSE TO HIGH INTENSITY TRAINING. VOLUME II: FINAL REPORT.
VT 010 819 ED 054 108 381
A STUDY OF LOW-WAGE WORKERS AND THEIR RESPONSE TO HIGH INTENSITY TRAINING. VOLUME III: TECHNICAL APPENDIX A: TABLES.
VT 010 820 ED 054 109 381
A STUDY OF LOW-WAGE WORKERS AND THEIR RESPONSE TO HIGH INTENSITY TRAINING, VOLUME III, PART 1 AND PART 2: APPENDICES B 1-5.

DAVIS, J. CLARK
VT 014 104 ED 055 241 458
IMPROVING PREPARATION OF PROFESSIONAL PERSONNEL FOR VOCATIONAL EDUCATION IN METROPOLITAN AREAS. FINAL REPORT. INSTITUTE VI.

DAVIS, REBA JONES
VT 014 976 499
THE RELATION BETWEEN NUTRITION KNOWLEDGE AND THE DIETARY INTAKE OF SELECTED WOMEN: A BASIS FOR ADULT EDUCATION PROGRAM DEVELOPMENT.

DAVISSON, MILDRED
VT 014 451 481
CAREER GRADUATES: A PROFILE OF JOB EXPERIENCE AND FURTHER STUDY OF STUDENTS WITH AAS DEGREES.

DEAN, ERNEST M.
VT 013 930 ED 054 102 455
A STUDY OF VOCATIONAL EDUCATION AS A FACTOR IN SELECTING A COMMUNITY FOR A MANUFACTURING PLANT SITE.

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE, WASHINGTON, D.C.
VT 013 748 ED 055 186 411
A SUMMARY OF THE TYPES OF "PARAPROFESSIONAL TRAINING" PROVIDED BY JUNIOR AND SENIOR COLLEGES AND UNIVERSITIES IN THE AREAS OF HEALTH, EDUCATION, AND WELFARE DURING ACADEMIC YEAR 1970-1971.

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE, WASHINGTON, D.C. OFFICE OF THE COMMISSIONER OF EDUCATION.
VT 014 234 ED 050 299 399
CAREER EDUCATION--MORE THAN A NAME.

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE, WASHINGTON, D.C. OFFICE OF THE SECRETARY.
VT 015 765 411
NEW CAREERS.

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT, WASHINGTON, D.C. OFFICE OF INTERNATIONAL AFFAIRS.
VT 014 214 471
FOREIGN EXPERIENCE IN PROVIDING WINTER JOBS IN THE CONSTRUCTION INDUSTRY.

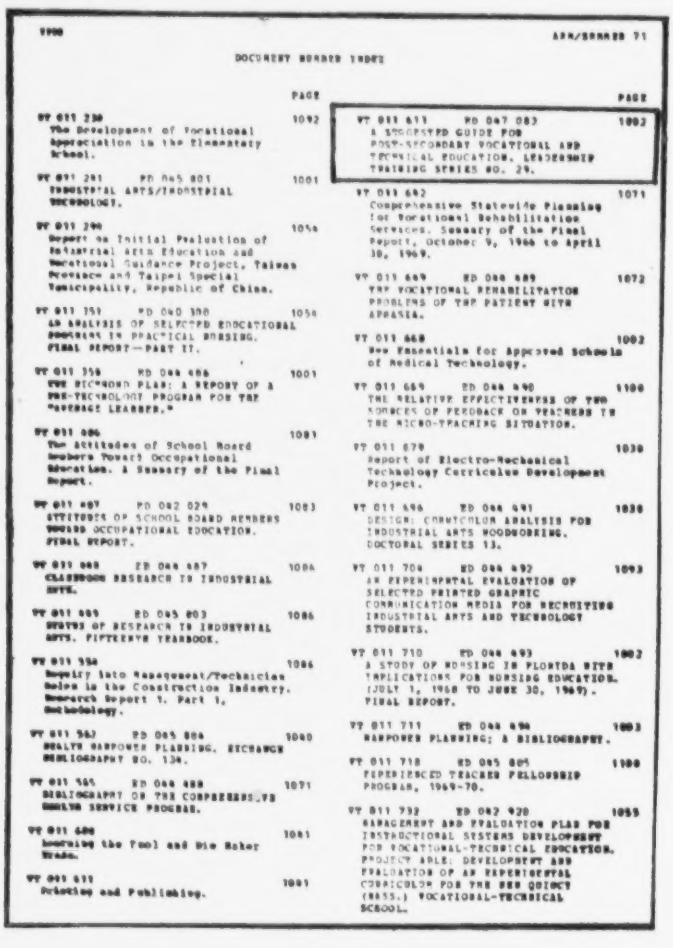
DEPARTMENT OF LABOR, WASHINGTON, D.C.
VT 008 016 ED 054 293 376
EMPLOYMENT POLICIES OF THE UNITED STATES AND JAPAN. REPORT OF THE JOINT UNITED STATES-JAPAN EMPLOYMENT STUDY.

ARM and AIM

Document Number Index*

Documents may be located in ARM and AIM if the specific accession number and the issue is known. Consider in the following example that the only information provided is the accession number VT 011 613 and ARM/Summer 71. Note that the page number of the abstract and the complete title of the document can be obtained by referring to this accession number. (Accession numbers are listed in numerical order in the Document Number Index.)

*Due to changes in format at the end of 1971, the Document Number Index is no longer included in ARM and AIM. Beginning with Fall 1971, documents can be located by referring directly to the Abstract Section where documents are listed in numerical order.



1970 ARM/SUMMER 71

DOCUMENT NUMBER INDEX

PAGE

VT 011 230 1092
The Development of Vocational Appreciation in the Elementary School.

VT 011 281 ED 045 801 1001
INDUSTRIAL ARTS/INDUSTRIAL TECHNOLOGY.

VT 011 296 1054
Report on Initial Evaluation of Industrial Arts Education and Vocational Guidance Project, Taiwan Province and Taipei Special Municipality, Republic of China.

VT 011 351 ED 040 398 1054
AN ANALYSIS OF SELECTED EDUCATIONAL PROCESSES IN PRACTICAL NURSING. FINAL REPORT—PART II.

VT 011 356 ED 044 486 1001
THE RICHMOND PLAN: A REPORT OF A PRE-TECHNOLOGY PROGRAM FOR THE "DISADVANTAGED LEARNER."

VT 011 406 1081
The Attitudes of School Board Members Toward Occupational Education. A Summary of the Final Report.

VT 011 407 ED 042 029 1083
ATTITUDES OF SCHOOL BOARD MEMBERS TOWARD OCCUPATIONAL EDUCATION. FINAL REPORT.

VT 011 448 ED 044 487 1084
CLASSROOM RESEARCH IN INDUSTRIAL ARTS.

VT 011 469 ED 045 803 1086
STATUS OF RESEARCH IN INDUSTRIAL ARTS. FIFTEENTH YEARBOOK.

VT 011 534 1086
Enquiry into Management/Technician Roles in the Construction Industry. Research Report 1, Part 1, Methodology.

VT 011 562 ED 045 804 1040
HEALTH MANPOWER PLANNING. EXCHANGE BIBLIOGRAPHY NO. 134.

VT 011 565 ED 044 488 1071
BIBLIOGRAPHY ON THE COOPERATIVE HEALTH SERVICE PROGRAM.

VT 011 600 1081
Apprentice Tool and Die Maker Trade.

VT 011 611 1081
Printing and Publishing.

VT 011 611 ED 047 083 1092
A STRUCTURED GUIDE FOR POST-SECONDARY VOCATIONAL AND TECHNICAL EDUCATION, LEADERSHIP TRAINING SERIES NO. 29.

VT 011 682 1071
Comprehensive Statewide Planning for Vocational Rehabilitation Services. Summary of the Final Report, October 9, 1968 to April 30, 1969.

VT 011 689 ED 044 489 1072
THE VOCATIONAL REHABILITATION PROBLEMS OF THE PATIENT WITH APHASIA.

VT 011 668 1082
New Essentials for Approved Schools of Medical Technology.

VT 011 669 ED 044 490 1100
THE RELATIVE EFFECTIVENESS OF TWO SOURCES OF FEEDBACK ON TEACHERS IN THE MICRO-TEACHING SITUATION.

VT 011 679 1030
Report of Electro-Mechanical Technology Curriculum Development Project.

VT 011 696 ED 044 491 1030
DESIGN: CURRICULUM ANALYSIS FOR INDUSTRIAL ARTS WOODWORKING. DOCTORAL SERIES 13.

VT 011 704 ED 044 492 1093
AN EXPERIMENTAL EVALUATION OF SELECTED PRINTED GRAPHIC COMMUNICATION MEDIA FOR RECRUITING INDUSTRIAL ARTS AND TECHNOLOGY STUDENTS.

VT 011 710 ED 044 493 1002
A STUDY OF NURSING IN FLORIDA WITH IMPLICATIONS FOR NURSING EDUCATION. (JULY 1, 1968 TO JUNE 30, 1969). FINAL REPORT.

VT 011 711 ED 044 494 1003
MANPOWER PLANNING: A BIBLIOGRAPHY.

VT 011 718 ED 045 805 1100
EXPERIENCED TEACHER FELLOWSHIP PROGRAM, 1969-70.

VT 011 732 ED 042 920 1055
MANAGEMENT AND EVALUATION PLAN FOR INSTRUCTIONAL SYSTEMS DEVELOPMENT FOR VOCATIONAL-TECHNICAL EDUCATION. PROJECT ABLE: DEVELOPMENT AND EVALUATION OF AN EXPERIMENTAL CURRICULUM FOR THE NEW QUINCY (MASS.) VOCATIONAL-TECHNICAL SCHOOL.

APPENDIX C

"Hands-On" Exercises for Use of ERIC Access Products

The following four exercises are designed to develop user competence in developing problem statements, identifying key terms, and conducting manual searches for relevant documents in RIE, CIJE, AIM, and ARM.

The exercises require the following ERIC access products: issues of Research in Education (RIE), Current Index to Journals in Education (CIJE), Abstracts of Research Materials in Vocational and Technical Education (ARM), Abstracts of Instructional Materials in Vocational and Technical Education (AIM), and the Thesaurus of ERIC Descriptors.

EXERCISE NO. 1

RIE INDEX

This exercise involves developing a problem statement from a description of an information problem, identifying key terms in the problem statement, and locating relevant documents by means of a Subject Index search of Research in Education (RIE).

Description of the Problem

A local school system is interested in implementing a comprehensive career education program. A committee has been asked to explore alternatives to the traditional methods of measuring education acheivement, and to recommend specific types of tests that would be appropriate for the career education program. The nature of the career education project requires that some alternative to traditional norm-referenced achievement measures be investigated.

1. In the space provided below, develop a clear, concise problem statement from the description of the problem.

2. From the problem statement, select and list below a maximum of four key terms and develop a search strategy specifying the combination of terms under which a document must be indexed in order to be considered as an "on-target" document.

INDEX/RETRIEVAL TERMS

Set 1	Set 2	Set 3

3. By use of the Thesaurus of ERIC Descriptors, convert any "non-ERIC terms" into "Eric terms" and list all of the ERIC terms to be used in the Subject Index search.

ERIC TERMINOLOGY TRANSFORMATION

Retrieval Term	Used in Thesaurus	ERIC Descriptor	Additional ERIC RT, BT, or NT terms

4. Complete the Subject Index search by identifying documents indexed under whatever combination of terms you specified as acceptable in the development of the search strategy (list accession number(s) and title(s)).

   a. _____

   b. _____

   c. _____

   d. _____

EXERCISE NO. 2

CIJE INDEX

This exercise involves developing a problem statement from a description of a search problem, identifying key terms in the problem statement, and identifying relevant journal article citations by means of a Subject Index search of Current Index to Journals in Education (CIJE).

Description of the Problem

As a senior faculty member in a teacher training institution, you have become increasingly interested in devising a means of screening students seeking admission to your teacher education program. Your interest is motivated by the increased emphasis on teacher accountability and by current projections which indicate a critical over-supply of teachers during the coming decade.

Your department chairman has indicated an interest in effecting such a screening procedure and has given you responsibility of reviewing the professional literature related to the problem.

1. In the space provided below, develop a clear, concise problem statement from the description of the problem.

2. From the problem statement, select and list below a maximum of four key terms and develop a search strategy specifying the combination of terms under which a document must be indexed in order to be considered as an "on-target" document.

INDEX/RETRIEVAL TERMS

Set 1	Set 2	Set 3

3. By use of the Thesaurus of ERIC Descriptors, convert any "non-ERIC terms" into "ERIC terms" and list all of the ERIC terms to be used in the Subject Index search.

ERIC TERMINOLOGY TRANSFORMATION

Retrieval Term	Used in Thesaurus	ERIC Descriptor	Additional ERIC RT, BT, or NT terms

4. Complete the Subject Index search by identifying documents indexed under whatever combination of terms you specified as acceptable in the development of the search strategy (list accession number(s) and title(s)).

   a. _____

   b. _____

   c. _____

   d. _____

EXERCISE NO. 3

ARM INDEX

This exercise involves developing a problem statement from a description of a search problem, identifying key terms in the problem statement, and locating relevant documents by means of a Subject Index search of Abstracts of Research Materials in Vocational and Technical Education (ARM).

Description of the Problem

You have recently been asked to serve as a member of a team of consultants which has the responsibility for performing a cost benefit analysis of vocational training in a particular area vocational-technical school. In a planning meeting of your evaluation team, it was suggested that a followup study be undertaken as a means of assessing students' progress subsequent to graduation from the area vocational-technical school. The data from this study will be analyzed along with other data in determining the cost-effectiveness of the school's operation.

You have been assigned the responsibility for developing the followup instrument to be used by the evaluation committee. Can you identify studies that can be used as guides in developing the methodology for carrying out this assignment?

1. In the space provided below, develop a clear, concise problem statement from the description of the problem.

2. From the problem statement, select and list below a maximum of four key terms and develop a search strategy specifying the combination of terms under which a document must be indexed in order to be considered as an "on-target" document.

INDEX/RETRIEVAL TERMS

Set 1	Set 2	Set 3

3. By use of the Thesaurus of ERIC Descriptors, convert any "non-ERIC terms" into "ERIC terms" and list all of the ERIC terms to be used in the Subject Index search.

Retrieval Term	Used in Thesaurus	ERIC Descriptor	Additional ERIC RT, BT, or NT terms

4. Complete the Subject Index search by identifying documents indexed under whatever combination of terms you specified as acceptable in the development of the search strategy (list accession number(s) and title(s)).

   a. _____

   b. _____

   c. _____

   d. _____

EXERCISE NO. 4

AIM INDEX

This exercise involves developing a problem statement from a description of an information problem, identifying key terms in the problem statement, and locating relevant documents by means of a Subject Index search of Abstracts of Instructional Materials in Vocational and Technical Education (AIM).

Description of the Problem

As a member of a committee of elementary teachers, you have been asked to review educational literature and develop a list of industrial arts instructional materials designed to be used at the elementary school level.

1. In the space provided below, develop a clear, concise problem statement from the description of the problem.

2. From the problem statement, select and list below a maximum of four key terms and develop a search strategy specifying the combination of terms under which a document must be indexed in order to be considered as an "on-target" document.

INDEX/RETRIEVAL TERMS

Set 1	Set 2	Set 3

3. By use of the Thesuarus of ERIC Descriptors, convert any "non-ERIC terms" into "ERIC terms" and list all of the ERIC terms to be used in the Subject Index search.

ERIC TERMINOLOGY TRANSFORMATION

Retrieval Term	Used in Thesaurus	ERIC Descriptor	Additional ERIC RT, BT, or NT terms

4. Complete the Subject and Identifier Index search by identifying documents indexed under whatever combinations of terms you specified as acceptable in the development of the search strategy (list accession number(s) and title(s).

a. _____

b. _____

c. _____

d. _____

APPENDIX D

Performance Tests

The following performance tests on ERIC Access Products, Research in Education (RIE), Current Index to Journals in Education (CIJE), Abstracts of Research Materials in Vocational and Technical Education (ARM) and Abstracts of Instructional Materials in Vocational and Technical Education (AIM), the Thesaurus of ERIC Descriptors; and computer searching can be used to determine user understanding of information retrieval.

ERIC ACCESS PRODUCTS

Directions: Circle the letter that corresponds to the best answer to the following questions.

1. Two reference indexes available through Central ERIC (C-ERIC) are:

   a. AIM and ARM
   b. ARM and RIE
   c. CIJE and AIM
   d. ARM and CIJE
   e. CIJE AND RIE

2. Two reference indexes available through the ERIC Clearinghouse on Vocational and Technical Education (VT-ERIC) are:

   a. AIM and ARM
   b. ARM and RIE
   c. CIJE and AIM
   d. CIJE and RIE
   e. ARM and CIJE

3. Microfiche and hardcopy reproduction of documents announced in RIE, ARM, and AIM are available through:

   a. The Center for Vocational and Technical Education
   b. The Government Printing Office (GPO)
   c. ERIC Document Reproduction Service (EDRS)
   d. The U.S. Office of Education
   e. The ERIC Clearinghouse on Vocational and Technical Education

4. Information material with broad national application is selected, abstracted, and indexed for the ERIC system by:

   a. Central ERIC
   b. ERIC Clearinghouses
   c. Research Coordination Units
   d. State Universities
   e. Educational Abstracts, Inc.

5. The scope of the ERIC Clearinghouse on Vocational and Technical Education (VT-ERIC) encompasses:

   a. Vocational and Technical Education
   b. Industrial Arts Education
   c. Manpower Economics
   d. Occupational Psychology and Sociology
   e. All of the above

6. The following library resource reference tools can be used to supplement the ERIC reference publications:

   a. Dissertation Abstracts (DATRIX)
   b. Government Reports Announcements (GRA) formerly USGDRA
   c. School Research Information Service
   d. Education Index
   e. All of the above

RIE PERFORMANCE TEST

This manual search exercise requires use of an issue of Research in Education(RIE). Consider the search problem below, then respond to the questions that follow.

> A school system is planning an outdoor education curriculum. Information on the philosophy, goals, and purposes of an outdoor education program is needed for establishing guidelines in preparing a curriculum guide. You are asked to help in obtaining the needed information.

1. Circle the one descriptor which is least appropriate to this information search problem.

   a. Educational Philosophy
   b. Curriculum Guides
   c. Educational Research
   d. Guidelines
   e. Outdoor Education

2. Select one of the above descriptors and list the accession number of one appropriate document found in the Subject Index.

   _____

3. On what page can the document resume be located? _____

4. Who is the author of the document? _____

5. Where can you secure the full-text document? _____

   _____

6. What is the publication date of the document? _____

7. Which ERIC Clearinghouse processed the document? _____

   _____

8. What is the name of the agency which sponsored the research?

   _____

9. On what page of the Author Index is this document cited? ____

10. On what page of the Cross Reference Index can the accession number be found?

    _____

CIJE PERFORMANCE TEST

This manual search exercise requires an issue of Current Index to Journals in Education (CIJE). Consider the search problem below, then respond to the questions that follow.

> A school administrator is concerned about the impact that recent movements toward a voucher plan might have on the financial aspects of a school system. By searching for relevant journal articles on educational finance, he feels that he might acquire recent information on the subject.

1. Circle the one descriptor which is most appropriate to the information search problem.

   a. Financial Problems
   b. Financial Support
   c. Educational Vouchers
   d. Educational Economics
   e. Educational Needs

2. Select one of the above descriptors and list the accession number of one appropriate journal citation found in the Subject Index.

   _____

3. What is the full title of the journal article identified in Question 2?

   _____

4. What is the name of the journal in which to find the article?

   _____

5. Under which Descriptor Group does the resume of the journal article appear?

   _____

6. On what page of the Author Index does the citation of the journal article appear?

   _____

7. What is the volume number, issue number, number of pages, and date for this journal article?

   _____

   _____

8. On what page of the Journal Contents Index does the journal citation appear?

_____

9. On what page of the Personal and Institutional Author Index is this document cited?

_____

10. On which page of the Conversion of Document Number Index is this document's VT number converted to the ED number?

_____

11. On which page of the Document Number Index is this document's citation located?

_____

AIM/ARM PERFORMANCE TEXT

This manual search exercise requires an issue of Abstracts of Research Materials in Vocational and Technical Education (ARM). Consider the search problem below, then respond to the questions that follow.

> An information dissemination specialist is needing assistance for developing a training program on information systems for vocational education. One purpose for such a training program is to improve the competencies of professional personnel who are responsible for public information programs for vocational education.

1. Circle the one descriptor which is least appropriate to this information search problem.

   a. Vocational Education
   b. Information Systems
   c. Institutes (Training Programs)
   d. Program Development
   e. Program Evaluation

2. Select one of the above descriptors and list the accession number of one appropriate document found in the Subject and Identifier Index.

   _____

3. What is the full title of the document identified in Question 2?

   _____

4. On what page is the resume of this document located? _____

5. Who is the author(s) of this document? _____

   _____

6. Where can you secure the full-text document? _____

   _____

7. What is the name of the agency which sponsored the research?

   _____

8. What is the publication date of the document? _____

THESAURUS PERFORMANCE TEST

This exercise requires a copy of the Thesaurus of ERIC Descriptors. Using the Thesaurus, circle the letter that corresponds to the best answer to the following questions.

Questions 1 and 2 refer to the Rotated Descriptor Display Section.

1. What descriptor immediately precedes "Rehabilitation Counseling"?

   a. Rehabilitation Centers
   b. Delinquent Rehabilitation
   c. Rehabilitation
   d. Correctional Rehabilitation
   e. Rehabilitation Programs

2. What descriptor immediately follows "Information Retrieval"?

   a. Relevance (Information Retrieval)
   b. Information Science
   c. Information Processing
   d. Search Strategies
   e. Information Retrieval Precision

Questions 3 through 7 refer to the Display Listing Section.

3. What is the broader term (BT) item for the descriptor "Inservice Teacher Education"?

   a. Inservice Education
   b. Professional Education
   c. Inservice Teaching
   d. Professional Training
   e. Teacher Education

4. If a teacher needed information on the narrow term (NT) for "Instructional Trips" the appropriate descriptor would be:

   a. Field Instruction
   b. Instructional Media
   c. Education Trips
   d. Field Trips
   e. Tourism

5. A related term (RT) for "Counseling Goals" is:

   a. Educational Guidance
   b. Counseling Programs
   c. Guidance Counseling
   d. Guidance Objectives
   e. Adult Counseling

6. The appropriate scope note (SN) for "Vocational Education" is:

   a. Occupational Training
   b. Formal Preparation for an Occupation below the Baccalaureate Degree
   c. Work and School Experience under the Direction of a Vocational Teacher
   d. All Types of Education Related to Industry
   e. Training for Employees Conducted by Industrial Organizations

7. Information on "Research Specialists" will be appropriately retrieved by searching the Subject Index using the descriptor:

   a. Research Directors
   b. Educational Researchers
   c. Research Specialists (Education)
   d. Specialists of Research
   e. Researchers

COMPUTER SEARCHING PERFORMANCE TEST

Consider the search problem described below and circle the letter that corresponds to the best answer for the questions that follow.

> A state education agency is planning to develop an animal science program at the junior college level for training agricultural technicians and veterinary assistants. Curriculum materials for planning and developing such programs are needed as well as examples of other programs and curricula that might already be in operation at other institutions.

1. For the above problem, choose the following problem statement which best describes the specific information needed.

   a. Materials are needed which can be used in designing facilities for programs in preparing agricultural technicians and veterinary assistants.

   b. Materials are needed for planning and developing an animal science program and curriculum at the junior college level.

   c. Information on evaluating animal science programs for training agricultural technicians and veterinary assistants is needed.

   d. Instructional materials for preparing junior college students for agricultural technicians and veterinary assistants are needed.

2. From the following combinations of descriptors, choose the group which is most relevant for the above problem.

   a. Animal Science, Agricultural Education, Community Colleges, Junior Colleges, Post Secondary Education, Program Development, Curriculum, Program Planning

   b. Animal Science, Program Evaluation, Agricultural Technicians, Veterinary Assistants, Program Planning, Curriculum Development, Agricultural Education

   c. Animal Science, Junior Colleges, Post Secondary Education, Facility Planning, Facilities, Agricultural Technicians, Curriculum

   d. Agricultural Education, Program Improvement, Instructional Materials, Veterinary Assistants, Agricultural Technicians, Program Planning, Facility Planning

3. Choose the combination of descriptors below which best illustrates the correct "and"-"or" (+ - /) logic in the search strategy.

   a. (+) Agricultural Education
      (/) Program Development

      (+) Program Planning
      (/) Junior Colleges
      (/) Post Secondary Education

      (+) Animal Science
      (/) Curriculum
      (/) Community Colleges

   b. (+) Junior Colleges
      (/) Community Colleges

      (+) Agricultural Education
      (/) Animal Science
      (/) Post Secondary Education

      (+) Program Development
      (/) Program Planning
      (/) Curriculum

   c. (+) Agricultural Education
      (/) Animal Science

      (+) Junior Colleges
      (/) Community Colleges
      (/) Post Secondary Education

      (+) Program Planning
      (/) Program Development
      (/) Curriculum

   d. (+) Agricultural Education
      (/) Animal Science

      (+) Junior Colleges
      (/) Community Colleges

      (+) Post Secondary Education
      (/) Program Development
      (/) Program Planning

Mission of The Center

The Center for Vocational and Technical Education is an independent unit on The Ohio State University campus. It serves a catalytic role in establishing consortia to focus on relevant problems in vocational and technical education. The Center is comprehensive in its commitment and responsibility, multidisciplinary in its approach and interinstitutional in its program.

The Center's mission is to strengthen the capacity of state educational systems to provide effective occupational education programs consistent with individual needs and manpower requirements by:

- Conducting research and development to fill voids in existing knowledge and to develop methods for applying knowledge.
- Programmatic focus on state leadership development, vocational teacher education, curriculum, vocational choice and adjustment.
- Stimulating and strengthening the capacity of other agencies and institutions to create durable solutions to significant problems.
- Providing a national information storage, retrieval and dissemination system for vocational and technical education through the affiliated ERIC Clearinghouse.